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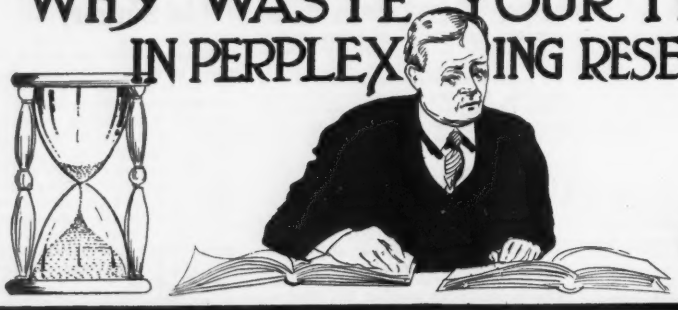

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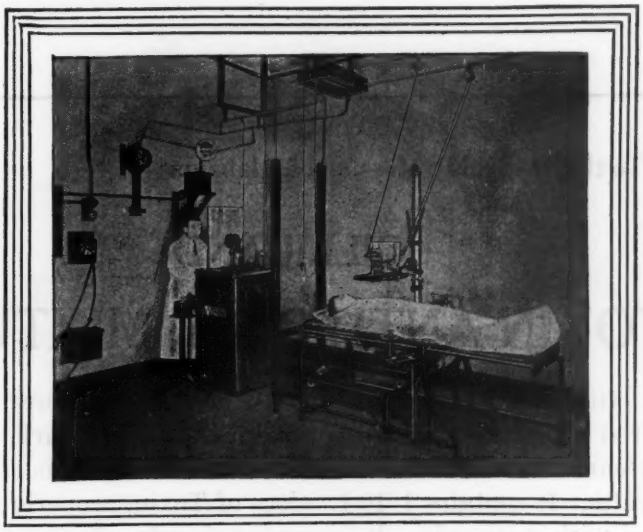

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TYPES OF CASES ADMITTED: The neurological department treats mild mental cases, so-called neurasthenics, neurological and senile patients, chronic invalids, and cases of mental deficiency.

The medical department is especially prepared to treat cardiac, nephritic, and diabetic disorders, cases of fatigue, preoperative and postoperative patients, and those requiring special diet.

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For Treatment
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NERVOUS DISEASES
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At Stone Mountain, Ga., 16 Miles from Atlanta
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TO THE DOCTORS:

After having owned and operated the Howell Park Sanitarium in Atlanta for several years I built the Cheston King Sanitarium on Peachtree Road, and during the crisis of the war the Government bought it from me.

Now I have just completed a Sanitarium that the profession can feel proud of.

Every room in this beautiful institution silently preaches the Gospel of Sunshine, impresses you with the tender care of Home—and sways your thoughts with the beauties and wonders of nature. As you view Stone Mountain, the largest Granite Mountain in the World—not excepting the Rock of Gibraltar, you have gazed upon one of the Wonders of the World. We have endeavored to make this Sanitarium, from the standpoint of location, equipment, cuisine, refined nurses, second to no institution in our country.

For any further information address Dr. J. Cheston King, 204-5 Peachtree Bldg., Atlanta, Ga., or Dr. W. A. Gardner, care The Cheston King Sanitarium, Stone Mountain, Ga.

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SURGICAL AND GYNECOLOGICAL CASES

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Founded and Incorporated in 1906

Training School for Nurses
(Approved for the training of Internes)

The Rutherford Hospital announces to the profession that its emanation apparatus and new x-ray plant have been installed. With the amount of radium in its possession, nearly one gram, they are prepared to treat all suitable cases.

Radium is often indicated in malignancy, preoperative, post operative and palliative for inoperable cases, certain types of myoma uteri and benign bleedings—Hodgkin's disease, keloids, venereal warts and certain skin diseases.

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For the Treatment of Nervous Diseases

Located in a beautiful park of twenty-five acres, in one of the famous all-the-year-round health resort of the world, where climate, air, water and scenery are unsurpassed. Five separate buildings, thoroughly modern, afford ample facilities for the classification and separation of patients.

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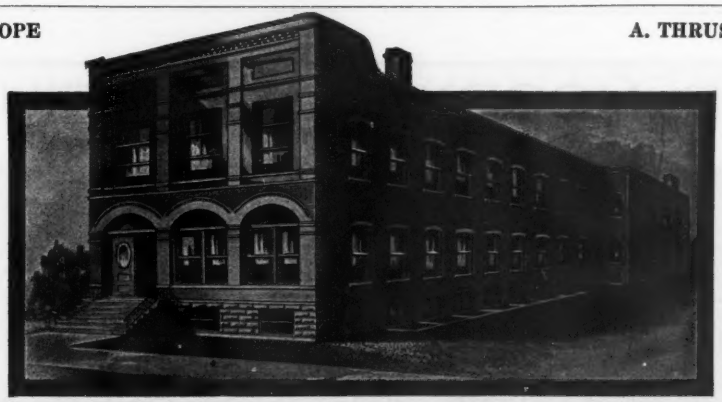

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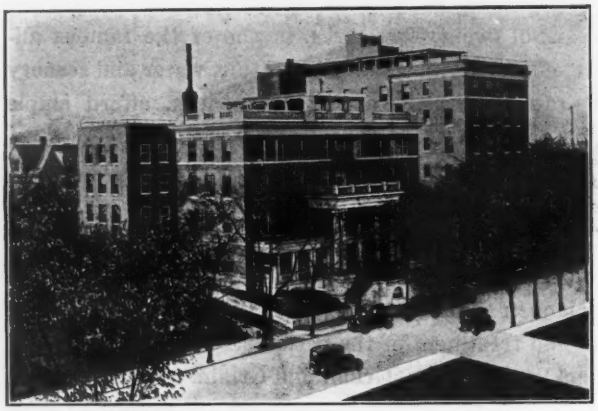

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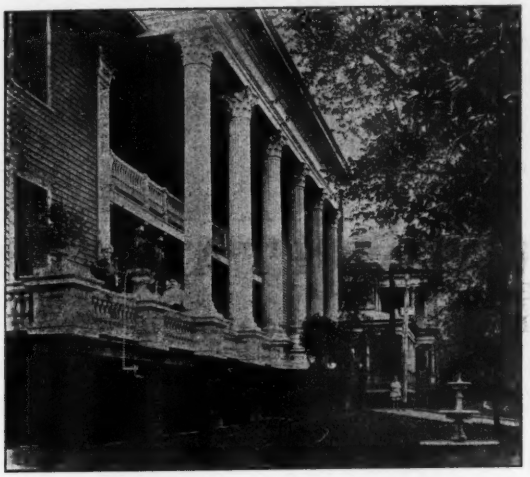

Digestive and Nervous diseases, Heart-artery-kidney affections, Malnutrition and underweight, Diabetes, Obesity, Anemia, Toxemias, Malaria, Rhuematism, Sciatica, Neuritis.

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Most modern and extensively equipped Sanitarium in the Southern country.

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WISHES TO ANNOUNCE TO THE PROFESSION THE OPENING ON NOVEMBER FIFTEENTH OF AN ADDITION TO THE INSTITUTION OF TWO BRICK BUILDINGS—ONE FOR MEN AND ANOTHER FOR WOMEN.

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An adequate night nursing service maintained. Sound proof rooms with forced ventilation. Elegant appointments. Bath rooms en suite, steam heating, electric lighting, electric elevator.

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For the Care and Treatment of

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Building Absolutely Fireproof

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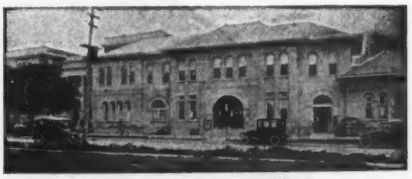

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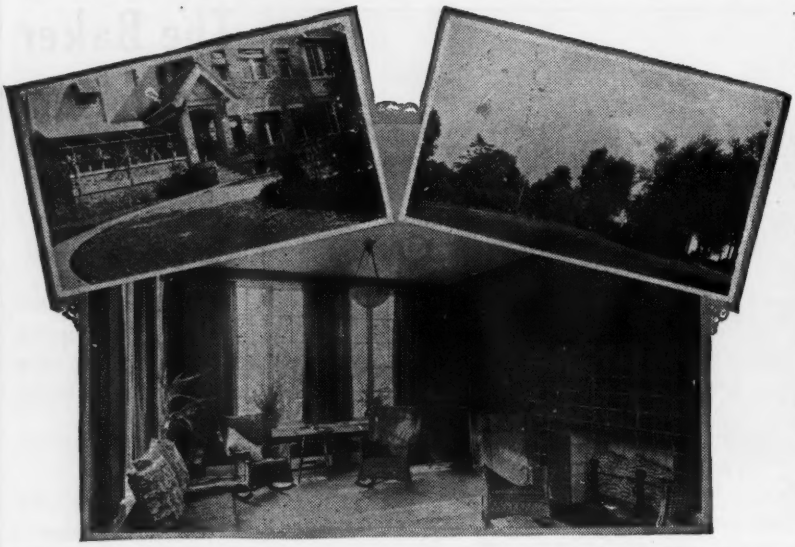

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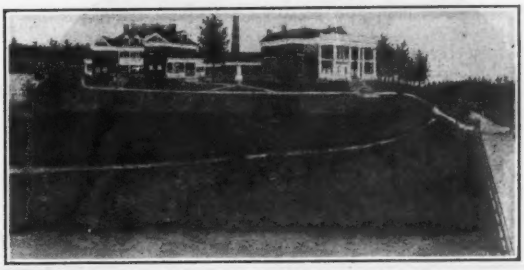

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Adoption of babies arranged for when desired.

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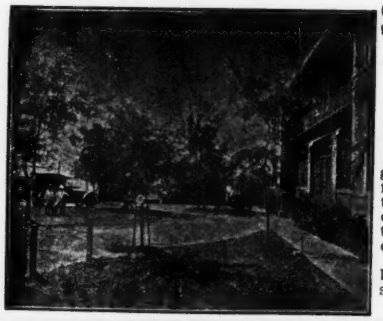

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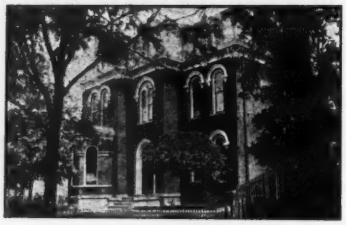

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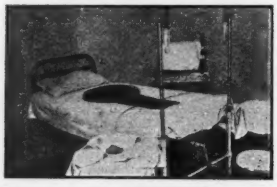

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SYMPOSIUM ON GALL-BLADDER DISEASE

GALL-BLADDER DISEASE*

BY MARTIN E. REHFUSS, M.D.,
Philadelphia, Pa.

The technical problems connected with gall-bladder disease are many, but the fundamental principles remain the same. First of all, we must clearly visualize the status of this organ.

The gall-bladder must be considered as an integral part of the hepatoenteric system. We must think of the liver as one unit and the intestinal tract as the other unit, the two associated by connecting links which the French call the hepatoenteric circulation. This conception is vitally important, as it emphasizes the complete dependence of one link of the chain on the other portion, the afferent chain connecting the digestive tract to the liver and the biliary tract, the great efferent chain. The liver, like the kidneys, is to a large degree the excretion organ. The biliary tract is the transit system for bile, and the gall-bladder is a diverticulum in the course of this transit system. It certainly plays no very active part in upper abdominal digestion. The lack of the organ in many animals and the comparatively unimpaired digestion which occurs in individuals who have been submitted to cholecystectomy bear out this view. Boroman[1] considers the gall-bladder a rudimentary organ to the liver. Its embryological growth is that of a diverticulum, and it is a well known fact that the older authors considered the gall-bladder but a modified bile duct. It is also significant that it contains but 30 c. c. of bile, which is less than 5 per cent of the total output (500 to 1100 c. c.). Physiologically, it is supposed to store up bile and then expel it at need, but many observers, notably Auster and Crohn,[2] claim that the gall-bladder is anatomically an organ with scanty musculature and poor contractile power. They are inclined to believe that the outflow from the gall-bladder is in the nature of an overflow incontinence. Sweet's idea was that the gall-bladder was slowly drained by the milking effect of the common duct. Harrer, Horgis and van Meter[3] claim that the muscle walls are too weak for regular discharge. Whether or not the innervation of the gall-bladder and the sphincter of Oddi are reciprocal mechanisms is not quite clear. According to Oddi,[4] the tone of the sphincter is such that it has a resistance of 675 mm. of water, which exceeds the normal secretory pressure of bile by 475 mm. of water. Certainly the modern tendency is to believe that the organ is in a sense a safety valve for pressure in the common duct, and that it has power of concentrating the bile by absorption of water. Rous and McMaster[5] showed distinct differences in the quality of the bile from the gall-bladder and that from the ducts. They have shown that the inspissation of the bile in the gall-bladder can proceed with great rapidity, and Crohn is of the opinion that the bile in the gall-bladder takes a long period of time to evacuate, stasis occurring normally in digesting dogs up to 3 days, while the filling of the empty gall-bladder is an irregular and slow process. The power of concentration of bile is probably by means of the absorption of water in the lymphat-

*Read in Symposium on Gall-Bladder Disease, General Session, Southern Medical Association, Sixteenth Annual Meeting, Chattanooga, Tenn., Nov. 13-16, 1922.

ics, injection of potassium sulphocyanid in the gall-bladder being followed by the presence of prussian blue in the periductal lymphatics. Alvarez[6] is of the opinion that the bile flow from the gall-bladder cannot be due to contraction of the organ, but occurs simply because the pressure in the common duct has been lowered by relaxation of the sphincter at the duodenal end. That the gall-bladder, however, concentrates bile, acts as a safety valve and secretes mucus must be evident. What we are concerned with, however, is its etiology.

ETIOLOGY

As one studies the anatomy and physiology of the gall-bladder a number of points become clear. The first important point is the fact that the gall-bladder serves in some way as a storage place for a moderate amount of bile. It therefore follows that the nature of the bile will in a sense determine certain conditions affecting the organ. (2) The nature of the bile is dependent upon the integrity of the liver cell. (3) The liver cell is dependent upon the character of the portal blood, and finally the character of the portal blood is dependent upon the nature of the intestinal contents. This is the line of reasoning which has made Chauffard say that the liver cell was in a sense the responsible agent in cholelithiasis. Certainly the two great problems with which the medical world has to contend in gall-bladder disease, apart from the rare tumors and comparatively unusual systemic diseases, are, first, the question of infection of the organ, and second, the formation of calculi. These problems may be entirely separate or associated, and in as much as the understanding of these problems is absolutely essential to the medical treatment of the condition, I shall discuss some of the facts in detail.

Two of the great advances of modern medicine are, first, the discovery of the extraordinary selective localization of bacteria of a given virulence in certain parts of the body; and second, the extraordinary selective elimination of bacteria. The most complete exponent of electivle lesions is Rosenow,[7] and in his last communication streptococci from gall-bladder lesions showed a localization in the gall-bladder of animals in 80 per cent of cases. Equally significant was the fact that 21 per cent of the animals receiving ulcer strains showed a localization in the gall-bladder, while 29 per cent of the animals receiving gall-bladder strains showed a localization in the stomach and duodenum. This would argue for the fact that with a certain virulence these organisms can strike the upper digestive tract and assume predilection through the gall-bladder, duodenum or stomach. Furthermore, it explains the association of these lesions.

Regarding the selective elimination of organisms, Richet, many years ago, pointed out the specific elimination of the colon typhoid group through the liver and biliary passages. Meyer, Neilson and Feusier[8] pointed out the fact that 20 to 30 per cent of the typhoid bacteria injected intravenously in rabbits were found in the liver in 10 to 15 minutes after inoculation. The same authors look on a gall-bladder infection as a sequel rather than a cause of repeatedly infected bile. Gall-bladder bile can be bacteriostatic, but is rarely bactericidal, and once bacteria gain the wall of the gall-bladder they multiply, invade the mucosa and spread by the lymphatics. It is interesting to note in this connection the studies of Richet.[9] He found that 51 per cent of 408 specimens of gall-bladder removed at operation showed a positive culture. The Bacillus coli was found in 27 per cent, the Bacillus typhosis in 7 per cent, the paratyphoid bacillus and the Bacillus alkaligenes fecalis each 2 per cent. The components of the Bacillus mucosus capsulatus group were found in 11 per cent of cases, and in 8 of the 9 instances where these organisms were found, 7 showed empyema. The green streptococci were twice as frequent as the hemolytic streptococci and curiously enough the mouth streptococci mitis and salivarius were twice as frequent as the streptococcus fecalis, the normal inhabitant of the bowel. This lesson is suggestive in as much as it indicates that of the culture infections certainly lesions of the upper respiratory tract can be considered as a precursor more frequently than the streptococcus of the bowel. Deaver and Reiman[10] found green streptococci in 20 per cent of

the walls of 45 gall-bladders removed, while no hemolytic streptococci were encountered. Scheele[11] found 63 per cent positive cultures of the walls of gall-bladders removed at operation. Bacteria were also found in the adhesions of the ducts around the gall-bladder and in the hepatic bed of the gall-bladder. In other words, it is generally acknowledged that infection of the gall-bladder takes place either through hematogenous sources or through hepatogenous sources. Furthermore, according to Sherrington,[12] damage to the hepatic cell is a precursor to the appearance of bacteria in the intrahepatic bile current. We consider this an extremely important statement, in as much as it tends to substantiate the trend of recent work along these lines. An intact liver cell is not likely to produce an infected type of bile. Furthermore, all the evidence seems to indicate that in chronic inflammations of the gall-bladder there is an infiltration of bacteria which cannot be reached by any known method of local treatment. Hartman, of the Mayo Clinic, has called attention to this fact. As the question of infection now stands, focal infections, the condition of the blood stream and the integrity of the hepatic cell are the determinants in gall-bladder pathology.

On the other hand, there is another type of individual who is clearly predisposed to biliary lithiasis. Chauffard[13] calls attention to the fact that there is a group of individuals who are hypercholesterolemic and lithiasic and in whom the biliary mechanism is deficient. In this group the individual can form cholesterol stones, and an attempt is made to show the association of this stone with an alteration in systemic body chemistry. The assumption is that there is an increase in circulating cholesterol, and corresponding to this increase there is an increase in the cholesterol of the bile. Ordinarily this cholesterol is held in solution by the bile salts, but under certain conditions there is hepatic insufficiency with an insufficient formation of bile salts and the resulting precipitation of cholesterol. Chauffard and his co-workers believe the liver cell is at fault, and furthermore that the determinant effecting the liver cell is the chemistry of the intestinal tract. In our laboratories we have attempted to throw light on the circulating cholesterol. On the other hand, in certain cases of clean-cut cholesterol stone, there was no evidence whatsoever of such an increase. The only explanation of this phenomenon is the probability that at certain periods there is a marked increase in cholesterol with the formation of stones, followed by periods in which the cholesterol is either normal or subnormal. There are many other things besides these mechanisms which apparently are associated with a high blood cholesterol. Syphilis, diabetes and arterial sclerosis are all found to be associated with it. On the other hand, Chauffard has shown quite clearly that in the latter months of pregnancy, especially the last three months and after delivery for several weeks, there is a pronounced increase in circulating cholesterol, a phenomenon which is associated with the frequency of gall stone phenomenon at this time. They were also able to show that the convalescent typhoid case shows an increase in blood cholesterol, a phenomenon which is not altogether at variance with the frequency of gall-bladder phenomena. These facts emphasize one point, and that is that there are individuals who are predisposed to calculus owing to errors in metabolism. Chauffard was of the opinion that the suprarenal glands and the corpora lutea were cholesterogenic in function.

One more point of importance before we leave the question of the etiology of gall-bladder disease is the question of jaundice.

Within the last year considerable doubt has been thrown upon the evidence of jaundice as an obstructive phenomenon. Through the use of the Vanden Bergh serum test continental observers have been of the opinion that many of these forms of jaundice are in reality due to a disturbance in the liver cell, and not to duct obstruction. Hatiegan,[14] by means of the indigo carmine test in studies of catarrhal jaundice, was of the opinion that there was unquestionably a liver injury. Barlocco[15] was of the same opinion. Geronne[16] likewise was of the opinion, after the testing of the liver function by chromocholoscopy, that the liver cell was injured and that

there was not infection of the ducts in most of the cases of transient jaundice. Furthermore, Geronne is of the opinion that the so-called catarrhal jaundice and icterus gravis differ only in the degree of liver injury.

DIAGNOSIS

In the diagnosis of gall-bladder disease one naturally turns to the following methods of study: history of the case, physical examination, x-ray examination, duodenal intubation, and other tests such as that of the urinary findings, fecal examination and blood serum.

In the history of the case the typical history of pain in the upper right quadrant or in the epigastrium, radiating along the right costal margin to the back and to the right shoulder is naturally suggestive of gall-bladder disease. This is particularly the case when these phenomena are more or less localized with sudden onset, the presence of vasomotor shock, chills, gastric distention with or without vomiting, and recurring paroxysmal pain. The diagnosis is even more apparent if jaundice and slight rise in temperature, residual tenderness over the gall-bladder and bile in the urine are demonstrable. In common duct obstruction there may be sudden, severe colic followed in two or three days by jaundice with or without fever. We all know that stone in the ampulla of Vater often shows marked jaundice and obstruction and may show all the findings of intermittent fever. The clean-cut cases of gall-stone colic are rarely difficult to diagnose. It is that chronic type of case with few exacerbations but with reflected symptoms that is difficult. In these cases the history is usually one of a flatulent dyspepsia, irregular in character and combined with exacerbations which are more or less acute. Many of these cases never give a clean-cut history of colic, but it is precisely in this group of cases as in chronic appendicitis that the finding of chronic inflammation of the gall-bladder at operation is disclosed. In taking the history I consider of importance the following points: (1) evidence of localization to the gall-bladder area and also evidence indicating slight jaundice, changes in the color of the stool, of urine, and the evidence of some soreness or residual tenderness. From the gastric standpoint these individuals usually show a flatulent form of dyspepsia, usually made worse by fats, with distress and discomfort which lacks the regular painful recurrence of the ulcer syndrome. In the old gall-bladder cases there is usually evidence of a chronic gastritis. In the acute cases or during acute exacerbation the phenomena may be those of high secretion. The stomach, however, shows on x-ray examination no evidence of any organic defect, but aerophagia, evidence of low grade inflammation, and the patient frequently complains of persistent nausea, bile back flow into the stomach, and not infrequently, intractable heart burn. This is far more frequent than recurrent pain.

The third series of phenomena are those associated with the bowel. In most cases of chronic gall-bladder disease there is spastic constipation with left-sided contraction of the descending colon, with right-sided retention, and dilatation of the cecum and ascending colon, and with the presence of mucus in the movements. In most cases of chronic gall-bladder disease there is unquestioned association of intestinal phenomena. This is far more pronounced with gall-bladder disease than it is with gastric disease.

Physical examination may reveal localized phenomena in the neighborhood of the gall-bladder. It may reveal a residual point of tenderness, not infrequently slight enlargement of the liver, almost always a palpable cecum and contracted descending colon. Chetmonski[17] recommends shaking the patient with the fist in the gall-bladder region as a method of arousing distress and tenderness in chronic gall-bladder disease. By careful palpation of the abdomen it is usually possible to show a relatively greater sensitiveness and distress in the gall-bladder area.

X-ray examination of the gall-bladder region is a method which cannot be dispensed with. It attempts to demonstrate gall-bladder disease in one of three ways: first, by the direct evidence of either calculus or an enlarged gall-bladder. The latter is a not infrequent finding. The demonstration of calculus, however, is somewhat

disappointing. In my experience less than 30 per cent of operative demonstrable calculi can be shown by the double intensifying screen technic. On the other hand, indirect evidence of gall-bladder disease can be shown in the ordinary x-ray studies of the digestive tract and is one of the most important points in this consideration. Evidence of fixation of the duodenum, pressure defects, or irregularity of the upper border of the duodenal bulb, or even extensive deformity of the first and second parts of the duodenum are by no means infrequent in gall-bladder disease. I have seen looping of the duodenum, redundancy of the duodenum, fixation of the stomach over the whole lesser curvature to the gall-bladder region, gross dislocation of the stomach to the right, gross dislocation and fixation of the hepatic flexure of the colon to the gall-bladder, as well as extensive adhesion formation involving the whole right side. The commonest manifestation, however, is a defect of the duodenum in its first portion, usually involving the upper border and not infrequently making it difficult to differentiate from ulcer of the same region. An indirect finding of importance is spasm of the antrum and certain German observers, notably Waldeyer, have reported gastrospasm during biliary attacks. I have seen antrum spasm not infrequently. I have seen complete dislocation of the stomach in at least a half dozen instances and on one occasion, following an attack of gall-bladder colic, I was able to see a very marked spasm of the stomach resembling the picture of scirrhous carcinoma. Equally common are enlargement of the air chamber of the stomach, transient cardiospasm and frequent, persistent pylorospasm. It is, therefore, of importance in the absence of a definitely demonstrable defect in the upper digestive tract to explain the phenomena on the possible basis of a gall-bladder lesion.

Duodenal intubation as a means of investigation of the biliary tract has come to stay. This method cannot be replaced by any other method because there is no other means of examining more directly the nature of the bile obtained. To Einhorn we owe the essential practicability of duodenal intubation, and to my colleague (Lyon) we owe the suggestion of the possible separate collection of bile. He believes that he can obtain a gall-bladder bile as a distinct entity, a contention which has been the subject of much speculation. Brown, Smithies, Whipple, Sachs, Friedenwald, Synott, Levin, Niles, White and Gibbson have come out in favor of this interpretation. On the other hand, Einhorn, Bassler, Dunn and Connell, Crohn and his associates, Hartman from the Mayo Clinic, Fitz of Boston, Alvarez and others, seriously question the value of the deduction made tending to localize the nature of the bile obtained by duodenal intubation. In other words, there is a serious question as to whether the gall-bladder has a sufficient control power to act in such a way to the stimulants that it is possible to obtain diagnostic data from such separation. The material obtained from duodenal intubation is never pure bile. It is always a mixture of several different forms of secretion. Abroad the same situation prevails regarding the significance of cytologic, bacteriologic and chemical findings in bile after peptone stimulation.

Personally, I am of the opinion that it is not possible to obtain a pure sample of bile by duodenal intubation. Furthermore, it is impossible to disinfect any portion of the upper digestive tract. That it is possible to make separate fractions representing the ducts, the gall-bladder and the liver is probable, but that these fractions represent pure secretions is not a tenable theory. It is possible to obtain even in healthy individuals organisms which may come from the upper digestive or the lower digestive tract.

This does not detract, however, from the great significance of a careful study of duodenal bile for evidence of biliary pathology. I use the simple method of intubation followed by the introduction of the three sodas and two aspirations, and I still use this method of study for bile cases. I attempt to demonstrate, first, changes in the bile from normal, as to its microscopical, cytological and bacteriological aspect and appearance. Second, the important evidence of disease in the bile is the same evidence as that which is obtained in the urine, or the gastric contents,

or the spinal fluid, although the variations may be different. The variations are as follows: (1) A change in color, consistency and turbidity. If these are distinct and persistent, they are suggestive of alterations in the biliary tract. (2) An increased cell count varying all the way from a slight increase to a puree of leukocytes. (3) The presence of abnormal elements such as cholesterol crystals, which, I agree with Lyon, is a precalculus stage and at least occurs in individuals who are potential lithiasics. Observers like Chiray and Semelaigne pointed out the significance of clumping of crystals. I have, however, found cholesterol crystals in individuals in whom subsequent operation failed to demonstrate any sign of calculus. (4) The presence of other elements which are not usually encountered in the normal duodenal contents such as crystals of the amino acids, e. g., leucin and tyrosin, and also certainly colloidal elements. (5) The evidence of profuse epithelial exfoliation with clumping of leukocytes. On the other hand, I have obtained dirty bile and clumps of cholesterol crystals with no evidence at operation of the presence of stone. According to the studies of Fitz on the bile of removed gall bladders, the study of the cholesterol content and the nitrogen partition of the bile is of little value, the variations in known pathological conditions being so great as to preclude the possibility of diagnosis. Fitz is also of the opinion that cytological findings are of little value, but I believe and feel that duodenal intubation is at least one link in the chain of evidence for or against a diseased biliary tract. I hesitate, however, to assign an undue importance to the nature of epithelial elements and likewise to the nature of bacterial cultures. We were able to obtain both the colon bacillus and streptococcus from the culture of normal duodena.

In summing up the question of the diagnosis of gall-bladder disease, it is therefore well to bear in mind not only the nature of the history, the evidence on physical examination, the evidence which the x-ray studies demonstrate, but also the laboratory evidence which is offered by duodenal intubation. In the last year very interesting serum studies have been made for the early demonstration of obstructive jaundice. As yet no reference has occurred to these studies in American literature, but German, Australian and English literature points out the significance of the Vanden Bergh serum test and also the extraordinary significance of this finding regarding transient forms of jaundice. The examination of the movement for fat digestion and bile content, and the urine for bile pigments and salts, are naturally of importance and should be included in a complete summary of the case.

TREATMENT

In the treatment of gall-bladder disease the important conceptions are the following: first, gall-bladder disease with the exception of certain primary growths is a residual disease or the resultant of systemic or extravesicular forces rather than that of actual gall-bladder disease itself. In other words, the two great problems with which we have to deal, viz., infection and stone, are both due to conditions which are outside of the gall-bladder. After infection has localized in the gall-bladder, or after stone has been formed in the gall-bladder, it becomes a disease entity capable of producing a certain series of phenomena which the surgeon may be able to relieve or completely remove. The fact remains, however, that in many instances the removal of the organ does not remove the mechanisms which have brought about the condition. It therefore follows that whether or not the patient be operated upon and receive surgical intervention, he is a medical case first, last and all the time. It is as much a mistake to claim that there is no medical side to gall-bladder problems as it is to say that every gall-bladder case, regardless of its nature, should be submitted to the knife. If the gall-bladder is an integral part of the hepatointestinal circulation, then it follows that in very few instances does gall-bladder disease occur without some interference with this mechanism. Furthermore, we might say regarding the phenomena of infection that gall-bladder infections are secondary infections, secondary to primary infections in some other part of the body, and that the need of removal of the infected gall-bladder is an indication that another infection exists. This necessitates

immediately the search for a primary focus of infection along the well known lines for infection anywhere in the body. On the other hand, the surgeon can say, and with justice, that medical men have attempted to attach an undue importance to the bile changes, when in reality a chronic cholecystitis is an organic disease of the gall-bladder wall. Medical treatment of gall-bladder disease, therefore, is directed toward the removal of focal infections, toward the increasing of immunity toward the organisms which we know produce gall-bladder disease, toward the correction of hepatic function, which means the correction of gastroenteric function, and finally, toward the adequate distruction of the vicious cycle which results in gall-bladder disease.

In other words, we can sum up the measures at our disposal from the medical angle as follows: first, the removal of all focal infections or their correction. This includes the teeth, nose, throat, sinuses and upper respiratory tract. It includes just as imperatively the correction of gastrointestinal infections and urinary infections. This is no place for the discussion of these factors, but it is my rule in every case of gall-bladder disease to attempt to improve the patient's resistance toward the colon bacillus and the streptococcus.

Second, if Chauffard be right in his contention that cholesterol is increased in the circulating blood, it follows that we have in the diet a means for controlling the exogenous cholesterol intake. There are many foods which are rich in cholesterol, and one of the commonest is the ordinarily much cherished egg. In the French diet for this purpose, the diet is limited to cereals, vegetables, fruit and milk, and they insist upon skim milk, so that the fat is cut to a minimum. If it be true that fat is the food substance most intimately concerned with the biliary and hepatic mechanism, it follows that a low fat diet is the one indicated in gall-bladder disease. Furthermore, a comparatively low protein diet is desirable owing to the fact that in almost every case of gall-bladder disease there is some colon retention.

The third important point is the care of the digestive tract. Perhaps more than any other single factor the character of the portal blood determines the character of the bile, and the condition of the intestinal tract determines the condition of the portal blood. Practically all medical treatments directed toward gall-bladder disease have for their purpose thorough evacuation of the bowel. Water treatments such as the Carlsbad and Vichy cure act only indirectly on the gall-bladder through their effect upon the bowel. The use of the large number of cathartics and laxatives as well as the stronger waters is simply to insure a more thorough evacuation of the bowels. The assumption is that intestinal retention produces toxic substances which act upon the liver cell. Therefore, it follows that all measures from mild laxatives and cathartics to a diet which is laxative in nature, and even the thorough cleansing of the colon are measures which are indicated in gall-bladder disease, except of the acute variety. These measures result in an alteration of the portal blood, and therefore an improvement of the liver bile. My rule is to put the patient on a low fat, low protein diet and carry out measures destined to insure a daily complete evacuation of the bowels. Owing to the fact that in many of these cases there is dilatation of the cecum and retention, it may be necessary to carry out complete or recurrent irrigations of the bowel.

Of the medicinal measures which have been suggested most are supposed to be cholagogues. Ipecac and substances of that type are unpleasant, and it is questioned whether aloes, senna, colocynth, podophyllum and calomel have any primary cholagogue effect. Any claim regarding the effect of mineral waters on gall stones is now recognized by all of us as sheer nonsense. Schonger[18] questions the cholagogue effect of menthol, salicyl and salicylates. Sodium choleinate is a direct cholagogue, but is disagreeable in taste and an intestinal irritant. Cholactol is supposed to contain the active principles of sodium choleinate (peppermint oil) and according to this author has the same effect without the disagreeable taste and bedside effects. A combination of ox bile and urotropin as felamel has been used by Zahn.[19] He claims that it relieves pres-

sure colic in 2 to 3 days in cases of cholelithiasis and cholecystitis, and should be used with belladonna. Cologin is supposed to contain calomel, todothyllin and aromatics. Cramer[20] thinks that the best cholagogues are those found in ordinary foodstuffs such as peptone and suggests that it is unreasonable that drugs can act through their cholagogue effect alone. Probably the greatest effect in almost every instance is the laxative one. The proper form of treatment naturally is to aim to improve the condition of the liver cell, and in turn improve the nature of the bile form.

Another method of treatment of these cases is that of duodenal drainage. I have used duodenal drainage many thousands of times, but have always combined it with a Murphy drip and laxative substances in such a way as to act over a period of time. We have seen marked improvement in many instances by transduodenal lavage, and it is difficult to conceive of the removal of a small amount of bile as markedly improving gall-bladder disease. Certainly an infection of the gall-bladder wall cannot be changed in that way. On the other hand, it is logical to expect relief from biliary stasis. It is my belief, however, after more than seven years' experience with transduodenal lavage as well as a method of bile drainage which I described several years ago, that the action is precisely the same as the action of various laxative and mineral water cures, with the addition, however, of considerable psychic effect on the patient. By means of the duodenal tube it is possible to get into direct communication with the first part of the small bowel, and therefore to accomplish more direct treatment which is often urgent and of considerable value.

The question finally for discussion is that of surgical versus medical treatment. This is a problem which belongs more properly to the surgeon. There are several points, however, which I would like to make clear for the benefit of the medical men as well as for the surgeons.

(1) One ought always to be on guard for possible associated diseases of which the most common are chronic appendicitis, chronic colitis and chronic lesions of the stomach and duodenum.

(2) It is my rule to urge operation when medical treatment fails to produce amelioration of symptoms and a cessation of acute attacks.

(3) It is my rule to urge operation when there are gross deformities in the upper right quadrant, usually demonstrable by the x-ray.

(4) I am compelled to urge operation in the presence of acute inflammatory diseases under precisely the same condition that one would operate upon an acute appendicitis.

(5) In the presence of common duct block or in the presence of chronic gall-bladder disease at the malignancy age when the patient fails to register, after an appreciable period of medical treatment, any improvement, the physician is warranted in attempting surgery.

Medical men cannot cure a diffuse, chronic cholecystitis in which there is infection and infiltration of the gall-bladder wall. They cannot cure demonstrable gall stones. They cannot absorb adhesions between the gall-bladder and duodenum and the stomach, nor can they by any stretch of the imagination replace an altered topography due to an extensive lesion in the upper right quadrant.

On the other hand, the medical man can and does relieve low grade infections, biliary stasis, functional alterations of the digestive tract with unquestioned functional disturbances in the liver and gall-bladder. In many instances he makes a gall stone case entirely comfortable, and for years, in many instances, he succeeds in rendering an individual immune to further attacks which are unquestionably those of infection of the gall-bladder. As to whether the gall-bladder ought or ought not be removed, it is the author's opinion that if the gall-bladder wall shows unquestioned evidence of infection, it ought always be removed. No form of drainage succeeds in controlling a form of focal infection. But the surgeon who operates upon the gall-bladder simply operates upon the end-product of the forces producing gall-bladder disease. The rest of the hep-

atoenteric circulation is still intact and the deviations which have brought about the disease are still present. Therefore, it is urgently necessary for the medical profession to realize the necessity for some form of post-operative procedure in gall-bladder cases in precisely the same way that it realizes the post-operative ulcer cure.

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Discussion follows paper of Dr. Abell, page 86.

SURGICAL TREATMENT OF DISEASES OF THE GALL-BLADDER*

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The cases of gall-bladder disease requiring surgical treatment are neoplastic or infective in origin. The neoplasms observed in the gall-bladder have been believed to be chiefly of malignant character, although papilloma and adenoma are more frequently present than was formerly thought. The carcinomas, like deep-seated malignancy elsewhere, are insidious in onset and rarely come under observation at a stage that permits of radical removal. They are usually seen in gall-bladders which have been long the site of chronic infective and calculus irritation, and by the time symptoms of growth are superimposed upon those of chronic cholecystitis the involvement of adjacent and irremovable structures will limit their surgical treatment to palliative drainage or to diversion of bile into the intestine by adventitious routes. Cholecystectomy is to be undertaken only when the malignancy is limited to the gall-bladder, and since symptoms can rarely be correlated with the growth at this early stage, the discovery of the malignancy is incidental to operation undertaken for the relief of the cholecystitis.

In 394 operations done for calculus disease, carcinoma of the gall-bladder was observed four times, or in 1 per cent, while in 288 cholecystectomies done for chronic cholecystitis without calculi no such case was encountered.

Adenoma and papilloma are always observed in the course of a chronic cholecystitis, their growth being induced or excited by the chronic infective irritation. They are usually of minute size, occasionally involve a large amount of mucosa and rarely produce masses that fill the gall-bladder, demanding cholecystectomy, not only for their ablation but for the cure of the causative cholecystitis.

In the last 288 cholecystectomies done up to October 1, eight such tumors were noted, five edenomas and three papillary adenomas, a proportion of one to thirty-six. Seven of these were associated with the presence of calculi, while in one presenting a papillary adenoma filling the gall-bladder no stone was present. Only in the most exceptional instances can symptoms be attributed to their presence, the overshadowing picture being that of a cholecystitis.

The infective diseases of the gall-bladder depend upon bacterial attack for their activation, the pathways of entry being conceded to be the portal circulation and the blood stream with the possibility of entrance through the common duct, although the latter is a disputed point. The coincident widespread interlobular hepatitis seen in some cases gives rather firm ground for the belief that the portal cir-

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culation is the route of entry in such instances.

The trend of thought today is toward the acceptance of blood stream infection of the gall-bladder wall rather than an entry through its mucosa. The frequency with which such invasion follows in the course of focal infections; the degree and extent of pathology in the submucous coat of the organ; the fact that the fluid contents of chronically diseased gall-bladders only infrequently give growths upon culture as compared with the frequency with which such growths are obtained from the macerated wall; and the presence of simultaneous infections in the appendix, duodenum and stomach, point to the importance of this mode of entry. The experimental work of Rosenow adds further evidence to these clinical observations which together form a firm basis for the preference for cholecystectomy over cholecystostomy. The writer does not share the belief that the gall-bladder is a vestigial organ and may be dispensed with as readily as the appendix. Its function is not definitely known. It is thought by some to be a reservoir wherein bile is concentrated, stored and delivered under certain conditions, by others a tension bag which regulates the flow through the common duct. The fact that after cholecystectomy there is a compensatory dilatation of the extrahepatic biliary ducts would argue the possession of a definite function even though its exact character remains unknown. Experience has shown that its absence is compatible with health and biliary function, particularly when the extent of its disease has been such as seriously to impair the biliary and digestive tracts. I have observed instances where after cholecystectomy the reflex digestive symptoms attributed to the cholecystitis have been replaced by those indicative of disturbed pancreatic function, and since the latter came into existence only after the cholecystectomy I have been at a loss to know whether it was a result of pancreatitis which existed before the removal of the gall-bladder, or a sequel to the latter procedure.

For the purpose of discussion the infective disease of the gall-bladder may be divided into three pathological divisions: the acute, the chronic, and that in which the gall-bladder disease is but a part of the involvement of the biliary tract. Of 621 cases of gall-bladder disease considered in this series, 60 were classified as acute, 36 as subacute, and 525 as chronic. Of the 394 operated upon in which gall stones were present, 55, or 13.9 per cent, showed a definite pancreatitis at the time of operation as evidenced by increased size and density of the head of the organ, and 2 presented an acute hemorrhagic pancreatitis. Of the gall-bladder disease 44, or 7.08 per cent, showed coexistent common duct involvement. Forty-one had obstruction of the cystic duct and 14 obstruction of the common duct. Acute perforation of the gall-bladder with diffuse peritonitis was present in five cases, while gangrene of varying degrees involving the mucosa and underlying walls was repeatedly seen, usually protected by adherent intestine and omentum. Abscess of the liver was present in 5, and fistulous communication between the gall-bladder and some portion of the intestinal tract in 6.

The clinical pictures presented by gall-bladder infections may be divided into three groups. In the first will be found the acute inflammations, with or without empyema due to cystic duct obstruction, and accompanied by constitutional evidences of more or less marked type. The second group comprises those cases in which there are no acute symptoms, but which give a history of colics and which present reflex gastric disturbance. The cases of the third group give no history of colic or acute attacks and have as their chief complaint epigastric distress and disturbance of digestion. In the first group the indications for operation are obvious. In the second and third, the operability must be determined by the clinical history. The choice of operation will of necessity be determined by the local pathology and the general condition of the patient. The varying degrees and extent of the local inflammatory process, with and without the obstruction offered by the resultant stone formation and the often associated hepatitis, cholangitis, pancreatitis, myocarditis and nephritis, present a complicated and difficult problem.

The two important indications in gall-bladder surgery are the elimination of infection and the removal of obstruction, and while theoretically it may be possible to outline specific procedures for attaining such desiderata, it must be conceded that from a practical standpoint no hard and fast rule can be laid down. It is the writer's belief that any gall-bladder sufficiently diseased to demand operation should be removed, granted that local conditions and associated disease permit this without too great increase of the operative risk.

In most acute infections of the gall-bladder the presence of hepatitis and cholangitis and the technical difficulties and dangers of freeing an acutely inflamed organ from a bed of protecting adhesions make cholecystostomy a far safer procedure. The chief indication in such cases is the saving of life, the accomplishment of which means that one must be content with incomplete work so far as local pathology is concerned. The greater number of secondary operations follow cholecystostomies done under such circumstances, the persistence or recurrence of infection and the presence of overlooked or newly formed stones giving rise to a continuation or recurrence of symptoms.

When there is no evidence of associated disease in the liver, common duct or pancreas and the general condition of the patient permits, these cases, particularly those showing areas of gangrene, can often be dealt with by cholecystectomy, which surely affords a more thorough operation from the pathological standpoint. The presence of a large amount of inflammatory deposit in the gall-bladder wall not only introduces uncertainty as to its complete resolution if drained, but greatly adds to the difficulty of removal of calculi, smaller ones being overlooked. The presence of jaundice increases the risk, and if it is subsiding operation should be delayed. As a rule, cholecystostomy in the presence of jaundice is the safer procedure. Prolonged jaundice means pancreatic disease, common duct obstruction, or biliary cirrhosis, and in importance greatly overshadows any disease in the gall-bladder, the surgical treatment of which must be subordinated to that of the graver condition.

In chronic cholecystitis, accumulated experience has demonstrated that removal of the gall-bladder will give the largest percentage of permanent cures. Removal of stones and drainage by means of cholecystostomy secures cessation of colic, but will give but temporary relief from the reflex digestive disorder. The firm contraction of the gall-bladder wall upon stones or the converse, its long-continued distension due to cystic duct obstruction, render it functionless and make it a potential source of trouble if retained. In chronic cholecystitis, with or without stones, the thickening of the gall-bladder wall with the enlargement of the glands along the cystic and common ducts indicates a low grade, productive inflammatory process which not only gives rise to local discomfort and interferes with the function of the alimentary tract, but acts as a focus of infection with secondary destructive lesions of the pancreas, myocardium and kidney. The ablation of such a focus secures for the patient the greatest protection. The chronic pancreatitis seen with this class of cases most frequently disappears after cholecystectomy, and it is conceivable that with the removal of the focus of infection the compensatory dilatation of the extrahepatic biliary ducts following the operation accomplishes this by affording more adequate drainage.

In the group of cases in which the gall-bladder represents but a part of the disease of the biliary tract that procedure should be selected which best suits the individual case. With associated common duct stone, in the absence of acute septic cholangitis and prolonged jaundice it is usually safe to remove the gall-bladder, tubular drainage of the common duct being provided. With acute septic cholangitis and liver abscess, drainage is the all-important consideration and only the imperative operative trauma should be inflicted, utilizing the gall-bladder as a drainage site either alone or in conjunction with the common duct, and the patient should be considered fortunate if his recovery should demand and permit of a secondary operation. In non-calculus ob-

struction of the common duct, due either to stricture or to the passage of the duct through a densely fibrous pancreas, the gall-bladder, if of sufficient size, by means of a cholecysduodenostomy, can be used to obtain an unimpeded flow of bile into the intestine.

Prolonged jaundice greatly increases the risk of operation by interfering with the function of the liver and the kidney and by inducing hemorrhage, not alone from the operative wound, but from the mucosa as well. The study of the clotting time of the blood does not always give a true index of this liability, some patients, with a short clotting time, bleeding severely, while others with a long clotting time bleed little. The free drinking of alkaline water and the intravenous administration of calcium chlorid is a decided help, but the greatest protection is to be derived from blood transfusions made before the operation is undertaken, consequently before the onset of hemorrhage. Continuation of symptoms after operations on the biliary tract are due to persistence or recurrence of infection in the gall-bladder, liver, ducts and pancreas or to overlooked or newly formed stones. Eighteen of the 411 cholecystectomies in this series had previous cholecystostomies. Some of these had been done for cholecystitis without stones, most of them for cholecystitis with stones. It is interesting to note that in three of the cases primarily operated upon by me the stone formation existing at the second operation greatly exceeded that found at the first operation. Of 66 patients operated upon for common duct stone, 7 had a previous cholecystectomy. The great variation in the pathological anatomy afforded by the size, number and distribution of the stones and the degree and extent of the inflammatory edema and infiltration contribute greatly to the difficulty of making a complete removal. In 394 cases, the stones were found in the gall-bladder in 339, the common duct in 31, the hepatic duct in 1, and the entire tract in 23.

Regardless of the care exercised in the execution of gall-bladder operations and the thoroughness with which they are done, it will not be possible in each and every case to eliminate entirely the infection or to remove the total tissue change incidental thereto, and this group will show either no improvement or else relief will be incomplete. The best results are to be attained by proper preparation of the patient before operation, by performing as thorough an operation as his condition will permit, and by competent supervision and treatment afterward on the part of both surgeon and internist.

DISCUSSION—SYMPOSIUM ON GALL-BLADDER DISEASE

Papers of Dr. Rehfuss and Dr. Abell

Dr. W. A. Bryan, Nashville, Tenn.—We used to take a case of tuberculous peritonitis and operate and say, "Now you are well; you are cured," and then somebody would come in a year later and say that patient had died of pulmonary tuberculosis, and we would say, "That is too bad; I had him cured." So we cured ulcers of the stomach, and then we found we were not curing ulcers of the stomach, and today it has been emphasized that the same thing that caused the first ulcer—which may be cured—must be kept in mind by the physician, and, as Dr. Rehfuss said, such a case should be kept under the supervision of the physician to avoid a repetition of the trouble in the future.

Kocher said that gall stones belong to the patient and that it was the patient's privilege to keep them if he liked. I suppose that is so, provided the patient knows what he is keeping. The patients who have cancer of the gall-bladder are the patients who almost invariably have had gall stones. One man gave a report of 99 per cent gall stones; another says 100 per cent; another 98½ per cent, and so on. If a patient understands that by keeping these gall stones he may have cancer of the gall-bladder later on, he must not blame anyone but himself. I would be inclined to advise the patient to get rid of them.

We know that gall stones in the gall-bladder or in the cystic duct are more favorable for operation, that the mortality is less, and that the recovery better than if the gall stones are in the common duct. Sometimes gall stones pass from the cystic into the common duct, and this increases the risk to the patient and makes operation more difficult and recovery more uncertain.

A great deal has been said about whether you should do a removal of the gall-bladder, or drain it. Dr. Abell has properly stated the whole situation when he says that the object of the internist and of the surgeon is to save the life of the patient. We have had a great deal of fun in the past about the old phrase, "It was a beautiful operation, but the patient died." There has been some truth in that. A man undertakes to do a cholecystectomy when he knows the patient is not capable of tolerating it. When he knows the patient's condition he ought to pull him out of the water before he tries to dry him. When the pa-

tient recovers from an attack, then if a cholecystectomy is needed, he can do it.

Another thing was impressed upon me recently by a case I saw. Fortunately, I did not do it; I do not think I could. This patient had several major surgical conditions, and of these conditions gall stones was one. So that patient had a major surgical operation, a cholecystectomy, and then another major surgical operation. And the patient died in a little while. I think it would have been much better judgment—and I think this is a thing that needs to be driven home to us—to operate twice, i. e., give the patient a chance to recover from one operation before attempting another.

The cases that come back because they have not been cured have been referred to particularly by Dr. Abell. Nearly every man who has done gall bladder work to any extent has done a cholecystectomy where he subsequently regretted it, and has done gall-bladder drainage where he subsequently regretted it. We all feel that we know how to cure a certain number of these cases, but a certain number of gall-bladder cases will continue to give us trouble, no matter what we do—whether we do an 'ectomy, or whether we drain. But when we learn that the other fellow also is having trouble of that kind, it adds to our comfort.

The big thing that has been impressed upon me is that there is no longer a question of a fight between the internist and the surgeon. These two are getting together more and more, and will work together more and more to get the patient ready for operation, do the operation properly at the proper time, under proper conditions, and look after the patient properly when the operation is finished.

Dr. A. L. Levin, New Orleans, La.—Our improved or unimproved patients, medical or surgical, are our best witnesses, and from them we draw our conclusions as to what methods of treatment are best.

I am an enthusiast of the duodenal biliary drainage when properly done in the proper case. The question of whether the gall-bladder can be emptied or not, whether B bile can be obtained or not, is of scientific interest to me as well as to you. The battle is still raging, a No Man's Land is still existing, but the fact remains that my patients from whom I have drained what I call "600 W bile" two years ago are still enjoying good health and have not yet reached the surgical altar. Duodenal biliary drainage is unquestionably of great value as a diagnostic and therapeutic agent, but only as a useful link in a chain of evidence or repair. A careful history is still of great value. Laboratory evidences, such as gastric analyses, x-ray, stool examinations and duodenal biliary drainage, are of vital importance.

In the last few months I have been interested in the digestive hemoclasia test of Widal to determine the protein function of the liver. I believe this test will prove of great value to determine whether the origin of the infection is not from the liver side. The surgeon in this respect can be our guiding star. He handles the gall-bladders and can corroborate the value of this test. If the trouble is from the liver side we should start housecleaning from that end of it. The treatment then should be a corrected diet, cholesterin free, no acids, plenty of vegetables and fruits, plenty of water, small and frequent meals, alkalies are essential, and exercise. All of these help to keep the bile in a liquid state. Eliminate foci of infection wherever they may be. I believe hepatic extract influences liver function, as I have demonstrated by my table of observations. One should correct constipation.

These gall-bladder dogmas apply to the surgeon as well as to the internist. Recognize the condition early to prevent surgical interference. Do not depend upon drainage alone, nor upon cholecystectomy alone. Do not drain everything that comes along. Make the correct diagnosis first. Give to the surgeon what belongs to him—a chronic appendix, adhesions which interfere with the proper function of biliary drainage, empyema of the gall-bladder, etc.

One more point I wish to emphasize as strongly as I can, and that is the use of the tube without a metal tip, which I advocated two years ago, and the nasal route in preference to the oral. It is positively not essential to have a metal tip of any description, and the nasal route is more comfortable for the patient and less troublesome for the doctor.

These are my practical valuable points. Try them, and if found satisfactory adopt them. Make use of them also in your gastric analysis.

Dr. C. W. Dowden, Louisville, Ky.—It is necessary first of all that we recognize the fact that Dr. Rehfuss' very thorough and complete presentation deals with the medical aspect of gall-bladder pathology rather than the question of liver function. This being true, any discussion must hinge necessarily upon what evidence we are able to obtain from a complete history, thorough physical examination, and a cautious study of the bile obtained by the Meltzer-Lyon method.

At the Hot Springs meeting, a year ago, I presented the results of our findings in a rather exhaustive study of 100 cases. The work was carried out with an open mind. No attempt was made to confirm or discredit the procedure. A series of normals were studied at the same time, and we were unable to find sufficient difference in the gross appearance, microscopic and cultural study of the bile from the normal and abnormals, to look upon it as a very reliable diagnostic procedure. While reserving the right to change our opinion after further study along the same lines, we concluded at that time that nothing had surpassed in accuracy a complete history and thorough physical examination for the diagnosis of gall-bladder pathology. A study of several hundred cases since that time has further convinced us of this fact. Furthermore, we are quite in accord with Dr. Rehfuss, that it is absurd to attempt to cure an infected gall-bladder (where the infection is in the wall and the bile itself is usually sterile) by duodenal drainage. Such

cases are distinctly surgical. On the other hand, a considerable number of non-infectious gall-bladder conditions, depending possibly upon stasis and accompanied by such symptoms as jaundice, headache, "biliousness," etc., are quite promptly relieved by the simple procedure of drainage.

Our work with the hemoclastic digestive test of Widal was very disappointing and wholly at variance with the results of Dr. Levin. The same was true of our experience with the phenoltetrachlorphthalein test. Neither of these, however, belongs in the discussion of this subject.

Dr. Seale Harris, Birmingham, Ala.—There is a value in duodenal or biliary drainage. I have seen cases of gall-bladder infection in which there was marked improvement following its use, and in which the condition seemed to have improved to such an extent that there was no recurrence of symptoms. However, that at the same time we were using the so-called duodenal biliary drainage, we placed the patient on a low fat and low protein diet, and he was made to rest. I believe that the general management in gall-bladder cases contributes to a considerable extent to the good results of the treatment.

Others have spoken of the need for the medical man and the surgeon working together, and I believe this discussion will be helpful along that line.

Dr. Rehfuss and others called attention to the importance of removing focal infections in gall-bladder conditions. I should like to call attention to the importance of removing the gall-bladder as a focus of infection in lesions elsewhere. I am quite convinced that the gall-bladder is a frequent source of infection, resulting in nephritis, in arterial and heart disease, in which there is frequently high blood pressure. I had a case a few months ago, a patient who came to me and said he had Bright's disease and had been told that several times. Some one had also told him he had gall stones, but that he should not be operated upon on account of the condition of his kidneys. His blood pressure was not very high; his urine showed albumin and casts; and his general health was not good. I assured him that he could be operated upon, and that he must be operated upon. I put him to bed, used duodenal drainage, and at the same time put him on a low fat and low protein diet. He was very much improved, so much so that he insisted that he did not want to be operated upon. I told him that it was absolutely necessary; and so the gall stones and gall-bladder were removed. His blood pressure came down to 130; the albumin disappeared from the urine, and only a few hyalin casts remained.

As to the value of duodenal drainage in cases of that sort, just how long we can get results, I do not know; but this case is interesting and suggestive. A few weeks ago a surgeon referred to me a case, a business man of Birmingham, who had a blood pressure of 210, with albumin and casts in his urine. Two or three days after the man was placed under my care he had an attack of acute pain, so intense that he had to have hypodermics of morphine. I told him I thought he had gall stones and that it was my opinion that he should be operated upon. He said that he could not spare the time for operation then, that he had a lot of money invested in a way that required his attention, and asked that if possible I should defer the operation for a time. He had albumin and casts in the urine; and he had some elevation of temperature—101 or 102°. But after two or three days of rest, drainage and diet his temperature subsided, the tenderness disappeared, the blood pressure went down from 210 to 150, and for the past two or three weeks has remained about the same. If this man has any more symptoms I shall insist upon his having his gall-bladder removed; and if he has gall stones they will come out with it.

The question of diet plays an enormous part in the production of gall stones and gall-bladder affections as well as in the prevention of recurring symptoms after the operation. I think one of the most important articles that has been contributed to medical literature is that by McGarrison, of the British Army, who experimented upon monkeys in the Himalayas, feeding them with autoclaved rice, or a sterile diet. He found that nearly all of these laboratory animals developed intestinal infection. At autopsy he made sections of the intestines and they showed gross lesions of the intestinal tract. The sections showed the bacteria going directly from the intestinal tract into the circulation. So it seems to be that a localized colitis is frequently a source of infection itself. In other words, it is a source of focal infection. In that way the liver and the gall-bladder becomes diseased, the infection coming from the intestinal tract.

I do not know whether gall-bladder disease or gall stones are increasing, but with our modern methods of living, with a diet of white bread and muscle cuts of meat, and with the experiments that have been made showing that all sorts of changes, for instance in the teeth, can be brought about by feeding animals on variations in diet, with all this I am convinced that the diet that we employ generally over the country is having much to do with what we believe to be an increase of gall-bladder disease. When the public is educated along this line I feel we shall have less of intestinal and gall-bladder infections.

Without doubt the internist can be very helpful in making an accurate diagnosis and in preparing the patient for the operation; and after the operation he can help immensely by placing the patient in better condition to reduce the chances of infection. Furthermore, the patient must be informed that if he expects to keep quite well and not have a recurrence of gall-bladder disease or biliary disease, he must be on a low fat and a low protein diet for a year and perhaps several years.

Dr. Rehfuss (closing).—I cannot see how a discussion of gall-bladder disease is possible without consideration of the mechanism by which gall-bladder disease takes place. In other words, the biggest point in the whole situation is the fact that gall-bladder disease is the result of a series of infections and mechanical disturbances of the

lower intestinal tract. The final, end result is what we see.

Dr. Levin called attention to hemoclasia, which is a test devised to throw light upon different functions. He said there was not much about it in the literature. There have been perhaps twenty articles upon this subject in foreign journals, but not much in this country. The purport of these articles has been lack of specificity of this test. Two years ago before the New York Academy of Medicine Dr. Thomas R. Brown said he had personally been much interested to know whether it was a specific test, but he had not gotten very far with the test. Less than 70 per cent were positive. The question is unsettled, and I should hesitate to make a statement from the foreign literature as it stands today. One German report has actually claimed that there is a leukopenia following the use of dextrin. In several articles the variation of leukocytes and leukopenia is considerable.

I think Dr. Harris made a statement that to my mind is extremely important, and that is that the gall-bladder is the seat of focal infection. I have twelve cases of nephritis under my care at the present moment with digestive manifestations and evidence of infection of the intestinal tract and gall-bladder. I have also a series of cases which I have seen with Dr. Patterson, of Philadelphia, in which cardiac manifestations are unquestionably associated with disturbance of the biliary tract, probably brought about by infection of the upper intestinal tract.

As to drainage, I have done that many thousands of times. You will find two articles of mine written in 1918 speaking of transduodenal lavage and drainage. The point about it is this: We have a number of cases, perhaps 100, that we have diagnosed probable gall stones from other findings, some x-ray findings, that are perfectly quiet; and we have a number of cases that are perfectly quiet that have received no other form of treatment. To me that is not scientific evidence. It is not scientific evidence to say that a man who has gall stones should live on a careful diet, and that because he lives under this careful diet the method is good. That does not prove anything. You must take a group of 100 cases and treat them one way, and then treat them another way, to prove they are similar cases. We have a number of cases of gall-bladder disease that stay well and they do not come to us until they have an attack. The evidence in an impartial court of justice is by no means complete regarding the value of duodenal drainage. The main point I wish to make is that there are arguments both ways. I have seen magnificent results from duodenal drainage, but I would hesitate to say what is the exact status of this method of therapeusis.

Regarding the tip, you know we all have our own personal likes and dislikes. I used twelve different tubes before I decided upon what I thought was the best. I am perfectly sure that nature did not intend the nostril to be used as a passage for a stomach tube or for swallowing anything. But Dr. Levin gets his results that way, and we get ours another way. One thing we do know, and that is that all the medical papers point to the necessity of placing the tube in the right direction and in the right position. Today we realize the necessity of combining fluoroscopy and intubation at the same time. Unless you have something on the end you cannot place the tube properly. I have made 2,500 examinations a year for several years, and a reasonable proportion was with the tube in place; and we cannot place a tube without a tip by means of the fluoroscope.

All I have to say is that I do not think the medical man controls the situation in regard to gall-bladder disease, and I do not think the surgeon controls it. If the evidence is clean cut, if the infection gets under the mucous membrane with infiltration of the wall, no method of local treatment can touch it any more than a cathartic will cure an infected appendix. These people quiet down because their resistance is increased But I want you to realize that these are only my own personal opinions regarding this matter.

MEDICINE

INTERNAL DISEASES, PEDIATRICS, NEUROLOGY, DIAGNOSTIC METHODS, ETC.

A REPORT OF 3080 CASES OF MEASLES WITH SPECIAL REFERENCE TO PNEUMONIA*†

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HISTORICAL

Measles is an extremely prevalent communicable epidemic disease characterized by fever, coryza, cough, conjunctivitis, and a typical rash. In such manner can we epitomize a disease unfortunately looked upon by doctors and laymen as a disease which every child must get, a disease whose complications are few, whose mortality is low, and a disease which is commonly regarded as mild and easily cured. In this paper it is our intention to contradict these beliefs and to emphasize the fact that especially in institutions for infants and young children no epidemic disease is more to be dreaded than measles, not only on account of its toxicity, but from the frequency with which it is complicated by broncho- and lobar pneumonia. As a cause of death it ranks first among the acute fevers of children, the death rate being highest under 2 years of age.

The liability to infection in measles is a recognized fact. It is almost universal in persons unprotected by a previous attack. Those peoples who have not inherited a partial immunity which might cause an attenuation of the virus of measles are peculiarly liable to it, and the mortality among them is exceedingly high, as was evidenced by the epidemics in the Fiji and the Faroe Islands. It was imported in 1875 from Sydney by H. M. S. Dido to the Fiji Islands, and 40,000 out of 150,000 of the inhabitants died in four months. There will also be brought to mind the widespread and fatal epidemic which decimated the inhabitants of the Faroe Islands in 1846, and more lately our experiences during the great war in army cantonments, where measles in epidemic form proved a great scourge.

INCIDENCE OF MEASLES

The number of cases of measles in our series were from 1919 to October 1, 1922, as follows:

	CASES TERMINATED			
Sex	1919	1920	1921	1922
Male	284	508	188	620
Female	228	495	190	565

The proportion will be seen to be about equal.

Age				
Under 6 months	4	19	6	20
6 to 12 months	44	69	16	97
1 to 2 years	140	256	84	385
3 to 5 years	141	340	122	370
6 to 10 years	78	199	87	197
11 to 15 years	11	25	7	13
16 to 20 years	12	27	15	34
21 years and over	53	57	35	61
Not reported	29	13	6	8
	512	1005	378	1185

The greatest incidence of measles, therefore, will be seen to be between the first and the fifth year, being 2113, or 68.65 per cent, of all our cases.

ADULT MEASLES

This occurred in our series of 3080 cases 350 times, or about 9 per cent of the total. It is naturally less virulent than infantile measles, owing to the gradually acquired immunity which comes with advancing years and environment. Incidentally, of those adults exposed to measles the greatest morbidity and mortality occurred in country-bred adults. This was proven time and time again in army cantonments during the recent war. Pneumonia was a complication in these cases of adult measles 13 times, or 3.7 per cent, the more common type being bronchopneumonia. In all we had 9 cases of bronchopneumonia, and 4 of lobar pneumonia, a percentage of 69.2 for the broncho type as compared to 30.8 per cent for the lobar type.

*From the Willard-Parker Hospital, New York City.

†Read in Section on Pediatrics, Southern Medical Association, Sixteenth Annual Meeting, Chattanooga, Tenn., Nov. 13-16, 1922.

INFANTILE MEASLES IN PRIVATE AND HOSPITAL PRACTICE

When one compares cases of measles in private practice to those seen in the hospital, one is struck by three things: first, they are less sick; second, the incidence of pneumonia and other complications is less; and third, the mortality resulting from the pneumonia is much less in private than it is in hospital practice. Just what are the reasons for these facts? Our statistics show them to be as follows: in private practice the children are well fed. They are seen from the onset of the disease. They obtain competent medical and nursing care. Their housing is better, and their general resistance is much greater to the disease. In the hospital cases the children are under-nourished, poorly housed and living in crowded, dirty surroundings. They consequently have poorer resistance to disease. They are not seen from the onset, as is shown by the fact that they come to the hospital with a well developed pneumonia. Many of them have tuberculous tendencies. A great number are referred to us from other hospitals, having been previously ill with some other primary disease than measles. The individual nursing care is less intensive owing to the number of sick children per nurse. For these reasons the hospital case suffers by comparison.

TYPES OF MEASLES PNEUMONIA

The two common types in order of occurrence are bronchopneumonia (capillary bronchitis) and lobar pneumonia. Objectively bronchopneumonia is recognized by a rise in temperature to 104° or higher, rapid breathing, dyspnea, and increasing unrest. The diagnosis is established by physical examination of the chest. Frequently the disease is bilateral, and the area of pneumonia is difficult to localize, especially when it is centrally situated. Small foci can readily be overlooked, especially where there is an intensive bronchitis of the smaller bronchi. A spreading bronchopneumonia in the course of measles is a very unfavorable complication. Those cases which recover frequently require several weeks before the dullness on percussion over the consolidated areas disappears. This has been termed "asthenic pneumonia" and it raises the question of a possible tuberculous infiltration, from which it can be differentiated only by its future course. Those persons, however, who have latent tuberculosis, particularly of the bronchial lymph nodes, may develop a more or less widespread tuberculosis. In children it is usually of the miliary type following the pneumonia of measles.

Lobar pneumonia is usually regarded as a rare complication of measles. The fact that our series showed 49 cases of lobar pneumonia out of a total of 826 cases of pneumonia would tend to contradict the impression given by the literature.

AUTOPSY FINDINGS IN MEASLES PNEUMONIA

Lobar Pneumonia.—In 4 cases reported in detail there was red hepatization in 1 case, gray hepatization in 3 cases, and the consolidation was firm and coarsely granular on section. Two of these cases were associated with purulent bronchitis in parts of the lungs that had not undergone consolidation, whereas in the 2 other instances there was acute bronchitis and peri-bronchiolar pneumonia only recognized by microscopic examination.

Bronchopneumonia.—The characteristic picture at autopsy in bronchopneumonia following measles is very similar to that found after an influenzal bronchopneumonia. In some cases there is found hemorrhagic peribronchiolar consolidation characterized by the presence of small gray spots clustered about terminal bronchi upon a homogeneously red background. In other cases peribronchiolar patches of consolidation with no surrounding hemorrhage were found, the majority being recognized with difficulty and only by microscopic examination. Lobular consolidation is quite common and peribronchial fibrinous pneumonia is present in at least one-third of all autopsies.

Unresolved Pneumonia.—The incidence of unresolved bronchopneumonia in instances of bronchopneumonia following measles is very high, being over 30 per cent. The essential features of this chronic lesion are either (a) a chronic peribronchiolar pneumonia; (b) chronic peribronchial inflammation; (c) chronic lobular inflammation; or (d) moderate thickening of the interlobular septa.

Suppurative Pneumonia.—Suppurative pneumonia with abscess formation is not common and usually follows a chronic bronchopneumonia. The usual autopsy findings are a consolidation of part or all of a lobe which shows on section a cloudy grayish red color. Inside this area of consolidation and below the pleural surface there are seen yellow opaque spots of necrosis.

Very unfortunately, at the Willard-Parker Hospital we have only a limited number of autopsies, so that the preceding findings are founded on a series of army autopsies.

FREQUENCY OF PNEUMONIA IN MEASLES

Pneumonia is the most severe complication of measles, varying from year to year in frequency and severity. Small reports, in a measles epidemic developing at Camp Pike, 65 cases of pneumonia occurring in 867 cases of measles, or 6.4 per cent. There were 8 cases of lobar, 48 cases of bronchopneumonia and 9 cases of streptococcus pneumonia. Seventeen cases died, showing a mortality rate of 30.4 per cent for the group. Five of these fatal cases occurred among the 9 streptococcus pneumonia. The mortality rate for the streptococcus pneumonia thus was 55.4 per cent, and that for the non-streptococcus, 25.5 per cent. All 9 cases of streptococcus pneumonia developed empyema, and no cases of empyema developed in the group of non-streptococcus pneumonias. As our patients' throats were not cultured, we can give no definite opinion on this point. It is well to keep in mind, however, the cases of empyema developing after a streptococcus infection.

Our pneumonia cases were divided into those which had the disease on admission and those developing it in the Hospital.

PNEUMONIAS

	1919	1920	1921	1922
Developed on Admission				
Lobar	11	4	3	8
Broncho	37	96	61	288
Developed After Admission				
Lobar	12	3	4	4
Broncho	33	111	23	128
Total	93	214	91	428

This makes a total of 826 cases of pneumonia, or roughly a percentage of 26.8, or over 4 times Small's figures.

Holt, in a series of 300 institutional cases, all under 3 years of age, records bronchopneumonia in 40 per cent of the cases. Of these 120 cases, 84, or 70 per cent, died. Of 2477 cases, including several epidemics of measles among children of all ages, pneumonia occurred in 10 per cent. It is our general contention that in every fatal case there will be found pneumonia in varying amounts.

Henoch's figures are a bit higher than Holt's and show 56 per cent of pneumonia cases following measles in various institutions.

MORTALITY OF PNEUMONIA CASES

Our findings were as follows:

1919	1920	1921	1922
64.15%	56.67%	32.36%	49.76%

This is an average during the past four years of 50.75 per cent. On the other hand, in 300 collected cases of measles in private practice pneumonia occurred in but 25 cases. The mortality of this group among children of the better classes was exceedingly low, being 4 per cent.

DURATION OF PNEUMONIAS

In the majority of cases where pneumonia developed, it made its appearance during the second week of measles, and where death occurred it took place during the third week. This fact is borne out by other observers, the percentage of second week pneumonias being approximately 70. The duration of pneumonia varies from 3 to 30 days. It did not exceed 1 week in 65 per cent of the cases. When the duration of pneumonia exceeded 10 days, some evidence of chronic pulmonary disease was found at autopsy.

MORTALITY FROM MEASLES

MORTALITY BY AGE

	1919	1920	1921	1922
Under 6 months	0	6	1	8
7 to 12 months	18	20	6	37
1 to 2 years	33	72	18	114
3 to 5 years	5	16	4	42
6 to 10 years	4	2	3	10
11 to 15 years	0	0	1	0
16 to 21 years	0	0	0	0
Over 21 years	0	1	1	2
Total	60	117	34	213

The greatest mortality is shown to be from 7 months of age to 2 years, there being 308 deaths out of a total mortality of 424, or a percentage of 72.6 during that period.

MORTALITY BY TIME IN HOSPITAL

24 hours and under	10	13	11	12
48 hours and under	5	10	2	7
Over 48 hours	45	94	21	194
Total	60	117	34	213

DEATHS FROM CAUSES OTHER THAN PNEUMONIA

1919—Marasmus	2	
Tuberculous meningitis	1	
Gangrenous stomatitis	1—	4
1920—Sepsis	6	
Tuberculous meningitis	3	
Diphtheria	4	
Empyema	2	
Marasmus	1—	16
1921—Empyema	1	
Myocarditis	1—	2
1922—Marasmus	7	
Empyema	2	
Mastoiditis	2	
Diphtheria	8	
Sepsis	6	
Tuberculous meningitis	3	
Empyema	1	
Myocarditis	1—	30
Grand total		52

All other deaths were due to pneumonia.

SEQUELAE OF PNEUMONIA

The most common sequela of a measles pneumonia is tuberculosis. This usually means that in a child with latent or primary tuberculosis, measles markedly predisposes towards secondary tuberculosis. This may appear as a general miliary tuberculosis, or as secondary tuberculosis of some organ. In particular, tuberculosis of the joints for some reason is prone to follow attacks of measles. The organ which is most commonly affected by tuberculosis is, of course, the lungs. This follows a broncho- or a lobar pneumonia and its most common form is tuberculous bronchopneumonia. Unfortunately we have no follow-up system to ascertain exactly the number of cases developing tuberculosis. The prognosis of tuberculosis following measles is, of course, comparatively grave. Empyema is another sequela of pneumonia and is regarded by many writers as very rare. This, however, appears in our series more frequently than the literature would lead one to expect.

The number of empyemas and tuberculosis cases were:

	1919	1920	1921	1922	Total
Empyema	3	6	2	11	22
Pulmonary tuberculosis	1	3	1	3	8

This makes a percentage of 2.56 cases of empyema and a trifle less than 1 per cent of pulmonary tuberculosis.

PROGNOSIS OF MEASLES PNEUMONIA

This will depend upon the age of the patient, his previous condition, the season of the year, and the severity of the epidemic. In determining the prognosis in any one individual case the temperature and the character of the eruption must be considered. An initial temperature of 104° or higher, or a temperature that continues high until the eruption appears, is a bad symptom. The mortality is directly proportionate to the height of the temperature, the death rate in one series of 30 cases with the highest temperature, 106° or over, being 84 per cent. A temperature that does not fall as the rash appears, or which rises after the rash fades, is also a bad prognostic sign. It is an unfavorable sign for the eruption to be delayed, to be very faint, scanty, hemorrhagic, or to disappear suddenly. This is usually due to weak heart action. A pneumonia which runs a high temperature, and one which does not readily resolve, should also be regarded as unfavorable and as possibly pointing toward a tuberculous condition.

TREATMENT OF PNEUMONIA IN MEASLES

Our treatment of pneumonia at the Willard-Parker Hospital approximates very closely the treatment of a broncho- or lobar pneumonia not complicating measles. In general, all our patients are put out upon an open veranda receiving a maximum of cold fresh air. If they are kept indoors the windows are kept open and the patient is protected from drafts. Diet of course varies with the age of the patient, water is always forced by mouth and we depend to a large extent upon milk and its modifications, broths, eggs, gruels and cocoa. Ice cream will prove of value especially in children who are difficult feeders. Alcohol internally is seldom used by us, as we feel that we can get better stimulation by means of hydrotherapy. Here we use alcohol and water sponges, cold packs or compresses, and occasionally cool baths at 85 to 70° F. The cold baths are especially useful in children when preceded by a mustard bath where there is high fever, delirium or stupor, circulatory failure or severe toxemia.

Local applications are seldom used by us unless there is severe pain on breathing. Dry cupping and poultices have been discarded. We use very few drugs. It is seldom that we use expectorants, as they have a tendency to upset the stomach.

For severe cough, inhalations of compound tincture of benzoin with the windows kept closed may be tried. Codein is of value (¼ to ½ a grain) in controlling very irritating coughs. Strychnin, especially when given hypodermatically, is of value as an aid to the respiratory center and to the circulation. In general, however, few drugs are needed. To dry up secretions where there is a persistence of the signs with many moist rales, atropin sulphate in doses as high as 1/40 of a grain per diem may be found of value.

SUMMARY AND CONCLUSIONS

(1) We report a series of 3080 cases of measles.

(2) In our series of 3080 cases of measles, pneumonia, bronchial and lobar, occurred in 826, a percentage of 26.8. In other words, 1 out of every 4 cases of measles either had pneumonia on admission to the hospital or developed it during the course of the disease.

(3) Of the 826 cases of pneumonia, 424 died, 51.33 per cent.

(4) The number of deaths from all causes was 476, so we see that 89.20 per cent of all the deaths in measles were due to pneumonia.

(5) What can be done to prevent the occurrence of pneumonia in measles? This is a very difficult problem to solve. Over half of our cases are transferred from other hospitals, when measles becomes secondary to some other previously existing condition. The greater part of the remainder come from the overcrowded sections where the children are usually undernourished with a consequent diminished resistance.

With these overwhelming odds against us in the hospital care of measles, the only recourse left is to advocate the prevention of overcrowding and to inaugurate more intensive nursing care, which unfortunately is not possible in New York at the present writing.

In smaller communities we would advocate home care rather than hospital care, especially where the environment is good. This automatically lessens the dangers of secondary or cross infections. It is obvious, therefore, that until we procure more utopian surroundings, measles and its complications will remain one of the chiefs of the captains of the men of death.

ON DERMATOLOGY*

By William Allen Pusey, M.D.,
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I have a predilection for making, now and again, an appraisal of the worth of the things to which I give my efforts, and that disposition appeared in me as I thought of this occasion. Is the field in which you and I are engaged one of the large and important departments of medicine? Is dermatology a worth-while vocation for men who want to devote their lives to serious and useful endeavor? And, if so, how should it be pursued? Such questions, I think, occur to thoughtful men in every occupation, and it seems to me appropriate to ask ourselves such questions on an occasion like this, when we are promoting a movement for the improvement of our specialty.

I shall answer in the affirmative the question "Is dermatology a worth-while specialty?" and in doing so I shall avail myself of the opportunity of marshaling some of the reasons for the faith that is in me.

The first evidence of dermatology's capacity is its vitality. Dealing with diseases which for the most part do not involve life and death, many of which are to be classified as unimportant, dermatology has shown a vigorous and uninterrupted growth now for more than a century. Modern dermatology may be said to have taken its beginning among a few pioneers in France and England in the early part of the Nineteenth Century, among men like Willan, and Bateman, and Plumbe, in London; and Alibert, Rayer and Cazenove, in Paris. Following these early disciples of dermatology, there was a rapid growth in the second quarter of the Nineteenth Century until, about the middle of the century, there was a fine band of men scattered all over Europe who were developing the subject of skin diseases under such leaders as Hebra, in Vienna, Bazin and Hardy, in Paris, and Erasmus Wilson, in London. Modern knowledge of syphilis had begun under Ricord, in Paris, in 1837,

*Read in Organization Meeting of Section on Dermatology and Syphilology, Southern Medical Association, Sixteenth Annual Meeting, Chattanooga, Tenn., Nov. 13-16, 1922.

when he had undone, by establishing the duality of syphilis and gonorrhea, the mischief which John Hunter had caused fifty years before, and which had retarded the development of syphilology for that half century. Worthy comrades of his in beginning our modern syphilology were Rollet and Bassereau and Clerc, in France, and Wallace, of Dublin.

These men founded modern dermatology and syphilology. Following them came a great generation of dermatologists, led by such men as Jonathan Hutchinson and Tilbury Fox, in England; Fournier and Vidal, in France; and Neuman and Kaposi, in Vienna. These pioneers in dermatology were real men, men in the very forefront of medicine in its greatest centers. Hebra, in Vienna; Fournier, in Paris; Erasmus Wilson and Jonathan Hutchinson, in London, are among the great names in clinical medicine of the Nineteenth Century. Hebra in his day stood out as the greatest teacher, and perhaps the greatest medical man, in Vienna in a group that included such masters as Skoda, Rokitansky, Hyrtle and Sigmund. On Fournier, in Paris, fell the mantle of Ricord at the St. Louis Hospital. His and Ricord's are probably the two greatest names in the clinical history of syphilis. Erasmus Wilson was the brilliant versatile leader in London in the middle of the Nineteenth Century, and Jonathan Hutchinson, with Sir James Padgett, was one of the great clinicians who brought down to the time of men now living the fine traditions that have given honor to English medicine from the days of Sydenham. Men like these found in skin diseases a subject worthy of their intellects.

These men of the third quarter of the Nineteenth Century established our modern specialty. They broke down for it, among the earliest of the specialties, the barriers which prejudice had erected against specialism in general. They made it a specialty which could not be ignored, and their followers have grown into a large and important body in every nation of culture.

American dermatology had its start in a few pupils of these great European masters of the middle of the Nineteenth Century. Most of them got the impulse to dermatology from Hebra's clinic in Vienna. Specialism did not take very early root in the United States, but dermatology was among the early ones. Many of us remember most of our pioneer dermatologists. I count it my good fortune to have known many of the first men who practiced dermatology as a specialty in the United States. J. C. White, and after him Wigglesworth in the sixties, were the pioneers in Boston. Henry D. Bulkley and Fanueil D. Weisse, who was a pupil of Erasmus Wilson, began dermatology in New York in the sixties. Quickly following them was that group some of whom did so much for American dermatology, including Freeman J. Bumstead, William H. Draper, Morris H. Henry, and, only somewhat younger, George Henry Fox, Keyes, Taylor, Piffard, L. D. Bulkley, Heitzman, and Bronson. This group, largely under the urging of Weisse, founded in 1869 the New York Dermatological Society, which is the oldest dermatological society in the world. In Philadelphia the pioneers were Duhring and Van Harlingen; in Chicago, Hyde; in St. Louis, Hardaway. These men were the founders of American dermatology. And yet, how modern do their names sound to us! When one thinks of this small group of fifty years ago and less, it impresses upon one the rapidity of growth of our specialty. Our greatest growth in numbers has occurred in the last fifteen years. Indeed, I know nothing testifying more strongly to the interest and strength and vitality of dermatology than the way in which younger dermatologists of training and skill have been scattering themselves over the entire country within the last few years. If the law of sociology, that those who multiply most abundantly will prevail in the earth, applies to dermatology, dermatology will, if it keeps up its pace of the last few years, become one of the dominating specialties of medicine.

The growth of dermatology and the increase in the ranks of dermatologists are testimony to the inherent interest of the subject; for dermatologists, unlike the surgeons, and laryngologists, and ophthalmologists, do not wear furs and ride in limousines. We have not the sort of specialty that leads to opprobrious opulence. Men

are attracted to it largely by its intrinsic interest; and in this, dermatology yields to no other specialty. As is so often said, ours is the only specialty in which nearly all pathological processes can be studied under natural conditions in the living. The processes on inflammation, of infection, of malignant growths, in all of their details and in all of their ramifications, can be studied in life only in diseases of the skin. This has resulted in an enormous accumulation of clinical observations in diseases of the skin, and in refinement in the distinctions between pathological processes in the skin, which is more elaborate than exists in any other specialty. And by the thoughtless this is used as a reflection upon us. But it is no fault of ours that we have observed more facts in our specialty than have been observed in some others, and that, having observed these facts, we have named them, for facts to be used must have names. Undoubtedly the elaborate distinctions that we have erected will be followed in time by condensation into smaller groups. But elaboration of details must come before broad generalization. What we have been accumulating are the facts that the Darwins of the future will simplify by grand generalization. It is none the less to our credit that we have furnished the stones for some of the future temples.

At the present time dermatology can claim that its field has been thoroughly traversed and its details studied and recorded. We have plenty of problems still unsolved, but in this we stand a full brother to all of the other departments of medicine.

In offering to medicine a thoroughly studied and a fairly well systematized set of observations covering all manifestations of pathological processes in the skin, we are offering a set of observations that have a bearing upon diseases in general and that are potentially of value in the study of every pathological process that effects human tissues. The potential fruitfulness of skin diseases in the solution of problems of diseases in general is illustrated well in the beginnings of bacteriology. In 1837, Schwann showed that yeasts, found in fermenting substances, were living organisms which were the cause of fermentation. Within two years Schonlein demonstrated that disease was produced by an organism when he discovered that favus was caused by an organism. Between 1839 and 1844 Gruber showed that ringworm and thrush were due to organisms, and in 1846 Eichstedt added another disease due to an organism by discovering the organism of tinea versicolor. Thus the centuries-long contention that a contagium vivum might be a cause of disease was settled in the affirmative by the demonstration of organisms producing diseases of the skin, and the science of bacteriology was founded.

It cannot be said that the potential values of dermatology in the elucidation of diseases in general have had extensive application as yet, but such applications are slow. The great fact is that these potential values exist. That the facts of dermatology will more and more be utilized in the elucidation of the problems of pathology in general will surely follow, as they become more widely known and are more widely studied in their bearing upon the problems of general medicine.

It is in this field of the application of the knowledge of disease processes as they are observable in the skin, in solving the problems of disease in general, that dermatology has its most interesting outlook upon the future.

As for us who are in the midst of dermatological practice today, I think we can congratulate ourselves that fortune has treated us with unusual favor. We have seen in the last twenty years an enormous enlargement in the importance of dermatology. I have been in dermatology for only half a short lifetime, but it is hard to realize the changes that have occurred in dermatological practice within my experience. The biggest single change has been in the knowledge of syphilis, and the greatest additions that have been made to our means of treatment have been through the applications of radiant energy. With x-rays and radium and ultra violet light we may claim to have made additions to our knowledge of therapeutics that have been applicable to diseases beyond the skin in a way which illustrates the potential values of dermatology to medicine in general which I have referred to above.

For the wide therapeutic application of x-rays and radium and ultra violet light has followed the knowledge that was acquired first in the application of these agents to pathological processes in the skin. And we in dermatology led in that work. We first showed by their application in skin diseases the therapeutic possibilities of these agents. And we have continued to lead in the solid progress of knowledge in radio therapy. We have fostered intelligent progress in their general therapeutic use by showing what could be done with them with intelligent use in the skin; indeed, we may claim almost to have saved them from disaster when the use of these agents in other fields, and in skin diseases by men who did not know the diseases they were treating, seemed at times to be hopelessly discrediting them.

The application of physical therapy to the treatment of skin diseases—of x-rays and radium, Finsen light, refrigeration, and the electrical destruction of tissues and other physical agents yet to be employed give promise of great enlargement of the field that the dermatologist is coming to occupy.

Considerations of this sort make me believe that dermatology is a thoroughly worth-while specialty; that its problems are as big as the problems of medicine in general; that they are worthy of the attention of any intellect; that you and I shall never be troubled like Alexander was by the fact that there are no more worlds for us to conquer. We will never be subject to the danger of finding our field too small for our continued intensive study. On the contrary, the trouble is that dermatology is too big for any of us. We cannot know all of internal medicine, or neurology, or physiological, or pathological chemistry, or bacteriology or physics, and until we know all of these, and more, we cannot have all of the training that there is need of for the solution of the problems of skin diseases. I think, then, that we may feel justified in the conviction that we have a worth-while specialty, and one that is entitled to our best efforts as long as we are capable of effort.

The next question that I raised is how can we, jointly and individually, best cultivate our specialty. I shall not attempt to elaborate in detail what a training in dermatology should be. We have all thought upon that subject; we have all had a more or less adequate training, and we all know how we would improve upon our experience if we had the years to go over again. And lately, too, the dermatological sub-committee of the Committee on Post-Graduate Training of the Council on Medical Education of the American Medical Association has suggested a plan of preliminary training in dermatology, which is a suggestive outline of how we should continue to develop ourselves after we have passed the period of preliminary training.

But I believe it is particularly appropriate on this occasion to call attention to the continuous development of the practitioner of dermatology in his specialty which comes from the association with his colleagues in dermatological organizations. One can speak best from his own experience. For that reason I refer to my own. From time to time I have tried to evaluate the parts of my experience that have seemed to be the most useful. I think perhaps the greatest development of all of us comes from the stimulus of the study of one's own cases in private and public practice. It is no new conviction of mine that, after that, the best part of my development in dermatology has come from the knowledge and the stimulation that I have gotten from association with my colleagues in our various societies. I think it must be a dull man who can come away from a meeting of men who are working in his own line without added enthusiasm for his work, and without some increase in his ambition to be a worthy member of his guild. That stimulation of morale, so to speak, is, I believe, one of the most important results of attending meetings. Along with that, a more important gain is the addition to one's knowledge which comes from these conferences with men working in the same field. The reading of papers has never seemed to me the most useful part of such meetings. The papers might perhaps be as well read in private. The discussions are stimulating and suggestive.

But the clinical meetings are the thing in meetings for dermatologists. Our spe-

cialty is unique in this respect: we can make ocular examinations of patients that usually are sufficient for diagnosis, and thus we can in our meetings see great numbers of cases to advantage. I am sure that no single factor in my experience as a dermatologist has been more useful than the knowledge which I have gained from the demonstration of cases at clinical meetings. The value of such meetings is shown by the way in which local dermatological societies are developing. When I began the practice of dermatology, the clinical opportunities of this sort were confined to an occasional congress, or an occasional clinical meeting of a national organization. There was at my beginning a local clinical dermatological society in New York, but I believe no other one in continuous existence elsewhere in the country.

In February, 1901, after several years of effort, we succeeded in starting such a clinical society in Chicago. Now there must be more than a score of clinical dermatological societies in the country. To me there is no question of their very great value in the education of the men who go to them and in the uplifting of dermatology in their localities. My twenty years in the Chicago Dermatological Society has been one of my most valuable experiences. It is unpleasant to think how much more deficient I would have been in dermatology had that society not come into existence.

It is for reasons like these that I heartily encourage the development of a dermatological society in the South. The development of dermatology in the South has been difficult. A dermatologist must have for his support a large contributory population. We cannot, like some of our special colleagues, live upon a population of a few thousand people. The result has been that the number of dermatologists in the South has been few. Now I am delighted to see that many Southern physicians are devoting their time to dermatology and that they are going to get together.

The South is of necessity a section in itself. It is most closely in conection with the upper Mississippi Valley, and, speaking for that section, I can say that we are delighted and complimented when you come to join us in our meetings. But for vigorous development of the specialty in your midst the men in the South should not have to depend for their dermatological associations upon other parts of the country. You should have your own organizations nearer at home, so that more of you can get together in your annual meetings, and so that more frequent small meetings can be held. I believe it is evidence of a very wholesome spirit that the Texas dermatologists have organized a local society which meets frequently, chiefly to see cases. I should be glad to see other similar local societies develop, and have frequent meetings. Above these local organizations I believe it will be a good influence for Southern dermatology to have its own society which can meet once a year for the reading and discussing of papers, for the study of cases, and for the interchange of views informally among its members. I would put as the most valuable functions of this society the informal interchange of views among its members and clinical demonstrations. If this society is to be of the greatest use, provision should be made for at least one clinical session at every annual meeting.

The development of this Southern society, I take it, will be regarded by no one as a substitute for the national organizations. It should supplement them. This country is so big that the yearly meetings of the Section on Skin Diseases of the American Medical Association and of the American Dermatological Association spread out too thin to meet the needs of the dermatologists of the entire country. The American Dermatological Association has, of necessity, been largely an organization of the Northeast. You men of the South are entitled to your own organization, whose meetings you can reach with less inconvenience. As a past executive officer of both of the general organizations I am sure that I can speak for them in saying that this society will be heartily welcomed by them, and will have their encouragement; that if there shall be any rivalry between us, it will be the sort of friendly rivalry which exists between brothers each of whom is as proud of the other's achievements as of his own.

SOME OBSERVATIONS ON CARBOHYDRATE METABOLISM*

By Marvin Smith, M.D.,
Jacksonville, Fla.

For more than fifty years the evil effects of faulty carbohydrate metabolism have menaced the onward march of man's civilization. I therefore feel that it is not out of order to preface my remarks with the statement of two or three questions pertinent at this time.

Why do the sugars and starches cause more gastrointestinal disorders among children than any other food element? And why is it that diabetes mellitus and Bright's disease have increased enormously within the last thirty years?

What is the reason that William Osler said that 85 per cent of all the ailments of the human family have their origin in the gastrointestinal tract?

What is the reasonable etiology of pellagra?

What is the normal mouth reaction and what is its relation to carbohydrate metabolism?

Where is the explanation for pyorrhea, gastritis and colitis?

Where is the beginning and where is the end of carbohydrate metabolism?

I invite you to ask yourselves these questions. After you have done so, let us approach together the huge subject of carbohydrate metabolism with unbiased minds.

It is with a vivid consciousness of my own shortcomings, both inherent and environmental, that I have undertaken to interest you in this important subject. I propose in this discussion to propound the thesis that much of the suffering of the human family is due not so much to an imbalance between carbohydrates and proteins where proteins are deficient, but to an imbalance in diet where there is an excess of carbohydrates, beyond the point of utilization.

I shall make reference to the relation of perfect balance between proteins and carbohydrates in accomplishing functional perfection of the gastrointestinal tract. I shall advance presumptive evidence of the effects of imbalance between proteins and carbohydrates. I shall report experimental proof of the effects of this carbohydrate excess and show how it affects certain glandular secretions.

I shall finally argue that excess of this food element intoxicates the entire blood stream and exhibits itself as a systemic poison and thereby becomes a direct cause of pathology. I shall then leave you to decide for yourselves the meaning of my experiments and observations and the correctness of my interpretations.

In considering any phase of carbohydrate metabolism, the question of tolerance at once presents itself to us for understanding. It is the amount of carbohydrate food that any individual of given body weight is able to assimilate without clogging the system with unnecessary glycogen and without forming an unusual amount of toxic acid by-products. It is the rate at which the tissues are able to abstract glucose from the blood stream and to polymerize it into glycogen.

I wish at this point to refresh your memory with the statement that in health we now believe that the normal individual consumes carbohydrates and proteins in the ratio of 3 to 1 (not "16 to 1") and that functional perfection of the gastrointestinal tract is usually maintained only when this proportion is used.

Most of my observations relate particularly to the carbohydrate tolerance of the human body and to the suspected evils that we may suffer from intolerance. It can be seen very readily that this is subject to great variation, and it is this wide difference in individuals that makes consideration of the sugar and starch question a gigantic one. No two possess the same tolerance.

"The mechanism by which the body ordinarily disposes of excessive amounts of glucose absorbed into the portal blood is not adjusted to operate when the systemic blood is suddenly overcharged with this substance. In the one case the glucose is a foodstuff; and in the other because of its excessive concentration in the blood, it is more or less of a poison."

Such results, in other words, merely show us how much glucose can be added at a time without any overflow into the urine,

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but furnish us no information as to the power of an individual to utilize a constant though moderate excess of this substance, and it is at this place that I hope to establish a line of cleavage and show that between the point of utilization where all assimilated glucose is put to use, and only normal by-products are left in the system, and the point of saturation where glucose lops over and is found in the urine, that there are between these two limits multitudes of individuals who are suffering and many who are dying with recognizable pathology. In fact, my contention is that between these two limits there is more disease and more suffering than can be found in all the other phases of faulty metabolism of this element. The early symptoms are often obscure and the appearance of disease most insidious.

The by-products of carbohydrate metabolism are acids, and when the saturation limit is reached, diabetes mellitus appears and the excess of abnormal acid by-products in the blood stream is a condition known as ketosis in contradistinction to acidosis which results from an accumulation of the acids of a normal metabolism from a faulty excretion by the kidneys.

I would not have you confuse in your minds the pathological picture of acidosis or ketosis with the observations I am attempting to present to you. You are all familiar with the dyspnea, the vomiting, the nervous manifestations, the cold extremities and the anxious expression which characterize this acute state; but my observations cover, if you please, a group of pre-acidotic symptoms which is not necessarily accompanied by diabetes mellitus or Bright's disease.

I take occasion to emphasize the thought here that when any individual exceeds the utilization point of carbohydrate intake, he is piling up in his system toxic acids in a blood stream which should be alkaline, and at every heart beat the tiniest capillaries strut with intoxicating fluid.

Exhaustive experiments and studies have been done on "the saturation limits" by Hamman, Hirshman, Benedict, Allen and Joslin, while the "utilization limit" has been thoroughly worked over by Woodyatt, Sansum and Wilder. McCarrison has shown experimentally that certain foods produce definite disease. Yarbrough has described a condition which he calls acidemia and claims that it is the cause of many metabolic diseases. The medical profession therefore possesses a working knowledge of carbohydrates as regards the saturation and utilization limits.

When any individual exceeds his tolerance to carbohydrates, a large group of symptoms may develop, but up to the present time I have not been able to find any systematic classification of these symptoms, nor have I seen any authentic statement of the definite pathology which they indicate.

In May of this year a dentist referred a patient to me whose mouth was so strongly acid that she was unable to get any relief with even extraordinary measures. Her gastric analysis showed complete absence of free HCl and total acidity. In the Dyrenforth Laboratory in Jacksonville I had the saliva analyzed and it was found to contain 0.1 per cent of hydrochloric acid and also diacetic acid.

Since seeing this case I have tested the saliva of 200 patients for reaction, and 196 gave decided acidity and only 4 showed alkalinity. A study of the daily menu of these 200 patients revealed the fact that for variable lengths of time 196 had used carbohydrates and proteins in a ratio of 4 to 1 or 6 to 1 or in some cases 7 to 1, while the four showing a decided alkaline reaction had been on a milk diet or a very low carbohydrate menu for weeks. No blood chemistry was done on this series. I might add that they represented almost every phase of gastrointestinal ailment.

Among the above number was a seaman who, while at sea under the influence of Bahama Island rum, got into a brawl with a fellow sailor and received a deep knife wound which extended across the left Stenson's duct, severing it completely. In ten days the wound had entirely healed except at the lower end, where the secretion from the parotid gland poured out constantly. From this discharging sinus I collected 10 c. c. of secretion and also 10 c. c. from the mouth and, after filtering, I placed in the two specimens 20 grains of plain white bread and it was noticeable that the secretion from the severed duct was more acid than that from the mouth and that the

former had a more active liquifying effect upon the bread than the latter.

I next subjected the patient to excessive carbohydrate feeding, giving him 2000 calories per day; and in seventy-two hours the reaction of the parotid gland secretion and also of the mouth had become very strongly acid. Indeed, so noticeable was the change that the patient complained of sourness of the mouth and soreness of the throat, whereupon the carbohydrates were reduced to 300 calories per day and by the standard litmus test the degree of acidity of the mouth and the parotid gland was promptly reduced to a faint trace. I wish here to call special attention to the fact that this patient received a normal amount of proteins during this period of testing and likewise a wholesome quantity of green vegetables and fresh fruits.

Deductions.—The dental case showed an unusual acidity of the mouth which I believe was the direct result of carbohydrate poisoning.

There is only one place in the digestive tract where the reaction should be acid and that, of course, is the stomach, and when the mouth is acid it is pathological and when the gullet is acid it is pathological. I contend that the urinary bladder is the only viscus in the body that is capable of exposure to either acids or alkalines continuously for any length of time without being damaged. I am not so sure that an alkaline urine would not in time establish disease in a bladder wall. It is only reasonable to suppose that if the saliva can become so strongly acid that it contracts and burns the mucous membrane, we might expect intractable mouth ulcers, diseased gums, fissured tongues and other signs of disease.

From the testing on the seaman we can certainly presume that the acidity of the mouth is due to, or closely allied with, the metabolism of carbohydrates. We may further presume that the reaction of the parotid gland secretion may be regulated and controlled by raising or lowering the carbohydrate intake.

From the 200 cases that were tested for mouth reaction we deduce the belief that the majority of people will show an acid mouth and that where an abundance of carbohydrates is taken as a food, this reaction is the rule. Furthermore, it would seem that a very large majority of the populace are eating excessively of this food element.

I am convinced that in this series the utilization limit has been exceeded, but in none was the saturation limit reached.

The individual whose dietary is overloaded with sugars and starches not only accumulates in his blood stream and tissues a quantity of acid by-products, but he invariably eats more of this food constituent than can be taken up during its hasty journey through the digestive tract. By the time it reaches the cecum much fermentation has taken place and a strong acid mixture lies in that portion of the enteron and as there is nothing to prevent absorption from going on extensively, this again further contaminates the blood stream and raises its degree of acidity. If the acid concentration of the blood stream is increased, the liver cannot perform its proper function and it is also reasonable to argue that the kidneys, spleen, pancreas and other organs alike suffer on this account and become the seat of pathology.

During the past summer I have conducted various experiments upon many domestic animals, feeding them upon different kinds and quantities of carbohydrates. Practically all of them sickened and died in four to ten weeks, showing principally gastrointestinal symptoms. The length of this discussion prevents my going into detail with these experiments, but I may state that ample vitamins and proteins were given.

After doing post mortem study on one of the guinea pigs and rabbits that had thus died, I submitted the viscera of the two animals to the Bunce and Landham Pathological Laboratory, in Atlanta, for careful study and they reported as follows:

"GUINEA PIG

"Kidney showed acute interstitial nephritis.
"Liver showed acute diffuse hepatitis with focal necrosis.
"Spleen showed acute diffuse splenitis with focal necrosis.
"Pancreas showed diffuse pancreatitis with destruction of the islands of Langerhans.
"Stomach showed ulcerative gastritis.
"Heart showed diffuse myocarditis.

"RABBIT

"Kidney showed acute diffuse nephritis.
"Liver showed areas of necrosis.
"Stomach showed acute diffuse gastritis.
"Lung showed bronchopneumonia.

"Heart showed acute endocarditis and myocarditis."

I believe that you will share with me the opinion that if excessive carbohydrate feeding will produce such pathology as that mentioned in the cases of domestic animals just cited, the same can be done and is being done in the human body all around us in countless individuals. We may safely assume from this that faulty carbohydrate metabolism puts in its most deadly work before the saturation limit is reached and that this is a stage of genuine poisoning. May we not from this draw a fair conclusion that hepatitis of the human liver, nephritis of the human kidney, and ulcerative and mucous conditions of the entire digestive tract of man may find in this a reasonable explanation? I believe that we can.

I hope not to become over enthusiastic or to make any dogmatic statements, but I must acknowledge that one year's intensive laboratory study on the carbohydrates has greatly stimulated my interest and that my eyes are beginning to open and that I can endorse the quotation:

"Let not him who seeketh, cease from seeking until he hath found; and when he hath found, he shall wonder."

A FEW POINTS IN RADIO-THERAPEUTIC TECHNIC OF THE FACE AND MOUTH*

By Walter A. Weed, M.D.,
Birmingham, Ala.

The technic of the mechanical application of radium and the x-ray is necessarily the predominant factor in success after the question of diagnosis, indication and dosage have been established. The variations in results obtained by different workers are in direct proportion to the precision and thoroughness of treatment. I have observed many unnecessary failures by men of unquestioned ability due either to a disregard of the importance of this factor, or to inability to execute the mechanical application of treatment. Within the past few weeks I have observed at different clinics two or three rather severe radium burns about the face due to failure to retain the radium in position during treatment.

There was no reason for this, and the effects from such maltreatment are more far-reaching than we might at first suppose. Until we radiologists attempt to work with the same precision and care as the most exacting surgeon does in the mechanics of surgery, our results will necessarily vary a great deal, and our specialty will necessarily get a great many just and warranted criticisms.

The question of dosage I shall not attempt to discuss here.

Often the treatment of lesions about the face and mouth by radio-therapeutic measures presents no special difficulties. However, quite a large number of these cases are extremely difficult to treat because of their inaccessibility and the mobility of the parts, for instance, epitheliomata involving the margin and mucous membrane of the eyelid. These cases can practically all be treated satisfactorily. There are no hard and fast rules, but each case is an individual mechanical problem. My plan is to cocainize the eye, cover the eyeball with a suitably designed piece of lead covered with rubber, evert the eyelid if necessary by means of adhesive plaster, a stitch, or a pair of chalazion forceps, and treat intensively. Likewise, lesions of the inner canthus may be given as intensive treatment as desired without danger to the eye itself or to the surrounding tissues. Lesions in this location are nearly always of the basal cell type, and in most instances are amenable to radio-therapy. It is pre-eminently the method of choice because of its efficacy, and the unapproachable cosmetic results. The choice between x-ray and radium is largely one of convenience. Everything else being about equal, I usually employ the x-ray because of the time-saving factor.

Another class of lesions that is often maltreated or under-treated is malignancies of the lip, especially of the inside of the mouth.

A case came under my observation about five months ago of a lady of advanced years. She had the most extensive case of leucoplakia that I have ever seen, covering practically all of the entire

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upper surface of the tongue, the buccal mucosa, the gums, and lower lip, with multiple epitheliomatous patches. She had been treated by a well known man in a distant city with practically no change of the condition. From her description, upon inquiry as to previous treatment, the deductions drawn were that she had been treated with a radium plaque, the radium content being, of course, unknown, for a period of thirty minutes to one hour every two weeks. It is obvious, of course, that no definite benefit could be expected from such treatment.

Probably my predecessor felt that it was hopeless, just as I did, and used his ammunition where he thought the chances gave more promise. Be that as it may, I gave her a total of 800 milligram hours (with a suitably designed applicator which I shall show you) within a period of three days, using from fifty to one hundred milligrams in twenty-five milligram tubes in close proximity to the parts, and unscreened other than the silver containers. In addition, I gave her an erythema dose of x-ray to either side of the cheek and under the chin, screened with three millimeters of aluminum.

In the treatment of lesions of the inside of the cheek especially, I think that the supplementary treatment by means of the x-ray from the outside is of considerable importance. Doubtless, all of you have observed the definite reaction of the mucous membrane of the cheek or nose one often gets when treating external surface lesions opposite these points. This patient had an extremely sore mouth following the treatment, but the point is this: she is apparently well following one series of intensive treatments made possible by simple mechanical devices for the purpose of holding the radium in position at desired points.

In epitheliomata about the face when there is considerable tumor formation, and in large moles, warts, etc., thermo-coagulation has been the most satisfactory method of destroying considerable tissue preliminary to the use of x-ray or radium. Thermo-coagulation as it is usually done is very painful, and has no great tendency to add to one's professional popularity. However, it can be done painlessly in most instances. Novocain is first used well around and beneath the tumor, after which is inserted two sets of multiple needles well beyond the margin of the tumor if it is malignant, and as deeply as desired. Each set of needles is connected together by a wire or small metallic chain. The two poles of the high-frequency machine are brought in contact with the two sets of needles. Thus the entire mass between the needles is thoroughly coagulated. If desired, the coagulated mass may be curetted away without pain while the anesthesia still lasts and the base of the tumor treated subsequently with x-ray or radium. Fulguration and thermo-coagulation have a tendency toward the formation of scar tissue. Therefore, it is important to follow their use immediately with x-ray or radium to obviate this tendency, even when treating benign lesions. The advantages of thermo-coagulation when done by this method are that it is both painless and bloodless, is relatively easily and quickly done, is without danger of dissemination, and there is a minimum risk of infection.

There are many factors to be considered in the treatment of lesions about the face and mouth, each case presenting its own peculiar physical characteristics and demanding its own method of handling. It has often occurred to me that not infrequently we neglect the importance of the practical application of treatment in our absorbed interest in the more theoretical and abstruse side of the question. Not only is there needed a knowledge of the histo-pathology, the differential diagnosis, and dosage necessary, as well as a delicate perception as to which particular method or combination of measures will be most efficacious, but, in our particular specialty one should possess a certain amount of initiative in devising satisfactory methods of application, and, furthermore, consummate concentration and an abundance of energy together with the courage of one's convictions.

425-429 Woodward Bldg.

DISCUSSION

Dr. W. P. Whittington, Asheville, N. C.—I have had quite a little experience in the desiccation and coagulation method described by Dr. W. M. Clark, who has had more experience than any man in the United States in the coagulation method.

I believe the essayist referred to the needle points being used by the direct current method. My method has been to use the single pole with a needle of any size and to inject 2 per cent novocain around the tumor. We can remove a tumor very quickly and painlessly with the Oudin current or the Tesla coil, which destroys it and does away with the necessity of using x-ray or radium afterward. I believe the Tesla current is better for secondary conditions because the heat radiating around will destroy those conditions in the surrounding tissues more effectually than the Oudin current.

A Member.—I have found in face lesions a convenient and accurate way of applying the radium so that you will not get secondary radiation and when you are through you will not find that you have treated one-half the

lesion and one-half the skin. My plan is to take a layer of protective, make a hole in it the size of the lesion, strap it to the face with adhesive plaster, and then put the radium over it. In that way I do not fail to cover the lesion.

Dr. Weed (*closing*).—The uni-polar method in small tumors, warts, etc., is very easily used, but if we are going to attempt to remove considerable tissue it is a very difficult method.

On a flat surface like the cheek or the back of the hand there is no difficulty about making the proper protection, but it has been extremely difficult to treat lesions of the tongue, mouth, inside of the cheek and lesions of the inner canthus.

The treatment of these conditions is not entirely a question of a man's knowledge, but of his energy and interest in his work.

NEEDS OF NEUROPSYCHIATRIC RESEARCH*

By George F. Roeling, M.D.,
New Orleans, La.

In presenting this paper for your consideration, I first apologize for deviating from a strictly scientific subject to this broad one, with time so limited.

Research in medicine is making some progress in all branches, especially along the lines of nervous and mental diseases and particularly so since our recent war experiences, and is holding out a very promising future, yet we individually and collectively as a body are lending very limited help.

This being, as it were, in the nature of a national organization, is the reason for my presenting this paper, calling attention to some of the needed requirements to meet with the strides of present research and the hopes of obtaining some discussion that would possibly lead to the bringing about of better results in so far as the elevation of the standard of this Section and an approach to greater efficiency are concerned. If we expect at all to reach attainment we must not only talk, but we must also show some form of concrete action in order to obtain the desired results.

As we all know, the aim of medical research is that of vanquishing and abolishing diseases. This can only be done by knowing the true etiology and then the proper scientific application of the remedial measures. It occurs to me just how little we do know at present of the causes of nervous and mental diseases and how little comparatively we have done as individuals and as a Section to prevent the increasing occurrences of these maladies.

As we are all aware of the increase in nervous and mental diseases throughout this country, especially since the recent war, it seems strange that so many individuals are unable to react and to adapt themselves to the sudden and rapid changes and demands of the present time.

We do know that inheritance plays a great part in the production of these diseases, as pointed out to us by Mandalin, which unfortunately is not based upon scientific principles but solely upon statistics which show some connection between cases. Many believe that inheritance of mental and nervous diseases are not due to direct defect of the germ plasm, but can be looked upon in the same way as the heredity of tuberculosis, namely, the inheritance of weak nervous and mental state which will not stand the strain of adult life. As we all know that at the time of puberty the human system is taken up with excessive physical and mental stress, new interest appears, sex interest, new traits develop, and sentiments revolutionize themselves. At this period circulation and metabolism of the brain are more active. These changes of circulation and metabolism have their influence upon the ductless glands and vegetative nervous system—all of these changes having their effect upon the part played in the establishment of disposition, mood and conduct, etc., of the individuals. It is at such time that the mind must reach its new development or succumb. Failure of adjustment at this time gives rise to neurosis or psychosis. The question then arises what should we do to check the occurrence of these cases and to improve upon our present method of handling them.

The following points, to my judgment, are worthy of some consideration:

The establishment of a national neuropsychiatric research commission as is being done at present in Germany, to take under its observation all psychiatrical state hospitals for the pur-

*Read in Section on Neurology and Psychiatry, Southern Medical Association, Sixteenth Annual Meeting, Chattanooga, Tenn., Nov. 13-16, 1922.

pose of studying the minute anatomical and physiological changes that take place in the neuro-mental syndromes and to make a more definite study of the transmission of these diseases along the lines of the so-called inheritance theory. The formation of laws and the creating of public educational bodies having for their object the elimination of these diseases, thus elevating the standard of requirements of our Section and increasing our efficiency to its maximum.

There should be established out-patient psychiatric clinics under state control for the purpose of instituting early treatment of neuro-mental cases before structural changes begin to take place in the organism, thus avoiding the possibility of later hospitalization. It should be the duty of this clinic to give full attention and follow up all cases through the period of puberty under the supervision of competent trained nurses and social service workers, taking care of their environment, proper mental hygiene, and general body upbuilding. This should include the observation of all children who are mentally backward at school, as well as the children who are known as social misfits on account of their inability to adapt themselves to the social requirements of the school room.

That all medical colleges should have free access to all state psychiatric hospitals, there should be some direct connection between the colleges and the various state hospitals. All undergraduates should be required to have certain periods of study at these various hospitals before graduation. Such provisions would stimulate better interest in the work along these lines and would give the profession as a whole better acquaintance with these diseases. There should be established a program of mental hygiene that should teach of the development and preservation of the powers of mind. It should be largely in the nature of education and should emanate from the national research congress. It should embody all the information obtained by the study and experience at these various state hospitals. Greater attention should also be given the prevention and proper treatment of all infectious and venereal diseases, drug and alcoholic addicts.

We should further endeavor to prevent the inheritance of mental and nervous diseases, which can best be done by the elevation of high social ideals and by impressing upon the public the necessity for a higher standardization of the human species. By the teaching of proper hygiene of the body and mind, segregation, sterilization of the mental defectives, thus checking the procreation of defective stock.

By endeavoring to obtain the exclusion of importation into this country of all mentally inferior subjects.

There should be established universal rigid laws covering the requirements for marriage that will lead to the better development of the human race.

By the influence of better germ plasm by giving early observation, care, study and treatment to the expectant mother along the lines that will lead to the betterment of her offspring, such as the elimination of infectious diseases, improvement of environment, correction of nutritional defects, giving proper attention to blood reaction and chemistry, also the pathology of the kidneys and urine, the avoidance of the ingestion of known poisonous materials having injurious effect upon the germ plasm.

The rigid enforcement of all statutory laws that are already intended to stamp out faulty and detrimental habits having a tendency to lead to nervous and mental diseases.

In conclusion, I may state that before the work of research can show any striking beneficial results or obtain any degree of efficiency in our branch, we must, as individuals and as a Section, endeavor to obtain better cooperation between all the branches of medicine and the enlightenment and education of the general public along these lines.

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TROPICAL DISEASES AND PUBLIC HEALTH

THE CLINICAL ASPECTS OF BOTULISM: SYMPTOMATOLOGY, PATHOLOGY AND RATIONAL TREATMENT*

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Until further experimental data are available, physicians should scrutinize the various botulism outbreaks for evidence that the spores of B. botulinus may germinate and produce their toxin in the body. However, careful examination of all available information indicates that a true botulism infection following the ingestion of toxin-free spores never occurs in the human being. The symptoms are due to preformed toxins in the food.

SYMPTOMATOLOGY AND COURSE

When discussing the time of onset of symptoms of botulinus intoxication in human beings it must be borne in mind that the victims of botulism fall into two main groups, viz., those in which there is initial acute gastrointestinal disturbance followed by the typical botulism symptoms, and those in which the typical botulism symptoms are the first to manifest themselves. Approximately one-third of the recorded cases in this country in which data are available have shown symptoms of an acute gastroenteritis type; nausea, vomiting and diarrhea, which usually come on early, last for from 12 to 36 hours and disappear with the onset of the typical symptoms of botulism. In the remaining two-thirds of the cases the evidences of nervous system involvement have been the first to appear. Acute gastroenteritis is apparently the result of local irritation by the spoiled food which is ingested, whereas it is now known that the typical botulism symptoms are the result of the action of the botulinus toxin upon certain portions of the peripheral nervous system.

The onset of symptoms in botulinus intoxication is usually from 18 to 36 hours after the ingestion of the poison, although they may appear very much earlier or may be considerably delayed. The earliest onset recorded in the American literature is 2 hours, and in our series, 4 hours after the consumption of the spoiled food. The most delayed onset in this series occurred on the eighth day. In 74 per cent of the cases the onset of symptoms occurred within 48 hours and in general it may be stated that when the symptoms occurred very early they were of the acute gastrointestinal type.

When gastrointestinal symptoms are present, the patient may complain of burning and distress in the region of the stomach or there may be nausea and vomiting, with or without diarrhea, which may persist for a few hours or for a day or two. The characteristic effect of botulism is, however, an early inhibition of the gastrointestinal movements which results in early and persistent constipation, and when initial diarrhea is lacking the constipation may be one of the first symptoms noted. Frequently there is distension of the intestines, but there is rarely any pain, tenderness or rigidity after the diarrhea has ceased. The earliest symptom in the majority of cases is a peculiar indefinite lassitude and fatigue, sometimes associated with dizziness or headache, which the patient often attributes to the accompanying constipation.

Disturbances of vision occur very early and are frequently the first indication of illness. There may be initial scintillations and dimness of vision due to early loss of ability to accommodate for near vision. There is early involvement of the third cranial nerve and the occurrence of blepharoptosis, mydriasis, loss of reflex to light stimulation, and diplopia is practically constant. Occasionally the pupils may be irregular in contour and unequal. Complete loss of accommodation soon follows. Impaired function of the external rectus

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muscle appears earlier and more frequently than of the superior oblique muscle. Nystagmus and vertigo are not uncommon and photophobia has been recorded in a few cases. Nystagmus may be seen on one side only.

The majority of authors agree that there is no disturbance of the retina. Apparently the dimness of vision is dependent upon loss of ability to accommodate, as usually the patient can distinctly see distant objects with either eye alone.

Coincidently with or closely following the onset of visual disturbances there is usually difficulty in swallowing and talking, and frequently the patients complain of a sensation of constriction of the throat. The tongue appears to be larger than usual, is sluggish in its movements and heavily coated on the surface, although the edges may be clean. There may be complete paralysis of the pharyngeal muscles with loss of the pharyngeal reflex. The voice is low and without normal tone and eventually there is complete aphonia. Even in the milder cases the onset of early fatigue of these muscles is very evident, and after short attempts at conversation speech becomes noticeably slower and more difficult and the voice more husky.

The difficulty in swallowing is apparently largely due to impaired function of the pharyngeal muscles, as patients state that they have difficulty in forcing the food from the pharynx into the esophagus, but that if it is once started they can easily swallow. It is probable, however, that the dryness of the mouth and throat is a contributing factor, as in the milder cases of patients who are able to swallow solid food if they take a liquid also. Attempts to swallow frequently induce strangling spells which may be very severe, and may persist until the patient is exhausted. Regurgitation of fluids through the nose and insufflation into the trachea and bronchi frequently occur during the strangling spells.

General muscular weakness, especially weakness of the muscles of the neck, is most striking. In severe cases the patients lie with the muscles completely relaxed and are unable to raise their arms or legs from the bed. Although such a condition closely simulates paralysis, it is seldom that true paralysis of the skeletal muscles is observed. There is often incoordination of the muscular movements of the arms and legs, and the patients may have difficulty in picking up small objects and may walk with an ataxic gait, but the reflexes of the skeletal muscles are practically always intact.

A very striking characteristic of botulinus intoxication is the almost complete absence of sensory disturbances. There may be initial headache and gastric distress, but usually the patient does not suffer any pain. Occasionally there is tinnitus and partial deafness and a few cases have been reported in which there was numbness and tingling of the extremities, but in by far the greater number of reported cases it was noted that there was no disturbance of sensation.

Mentality usually remains clear until a very short time before death. Restlessness, insomnia and occasionally hysterical attacks are noted, particularly at the onset, but the patient often becomes apathetic or even somnolent as the intoxication increases. There may be spells of irritability when he is aroused, apparently induced by his inability to make himself understood, or to swallow, and often there is great apprehension of approaching death. Occasionally there may be coma for a short time before death, and a few cases are recorded in which there were convulsions, but a most striking feature of the intoxication is that mentality is usually unimpaired throughout the illness.

Inhibition of many of the secretions is also characteristic and the patients complain bitterly of dryness of mouth, pharynx and nasal passages. A few cases have been reported in which the salivary flow was increased, and it is said that this is usually true in forage poisoning in horses. But in the cases examined during this investigation the serous portion of the saliva has always been inhibited and there has always been a thick tenacious mucus in the pharynx which is removed with the greatest difficulty.

According to the literature there is usually inhibition of sweat secretion, but it is not uncommon to find the patient bathed in a profuse sweat which has an offensive

odor. When sweating is inhibited the skin becomes hard and dry.

There is considerable variation in the reports concerning the secretion of urine, but apparently in the majority of cases the amount of urine secreted depends directly upon the amount of fluid which the patient has received. Oliguria and anuria have been described, but that is not surprising when one considers the difficulty or impossibility of swallowing liquids. There has been no characteristic change in the urinary constituents or sediment in the cases of this series.

The temperature is usually subnormal. In the majority of cases it ranges between 96 and 98.6° F., and in uncomplicated cases remains low during the whole illness. Not infrequently there may be fever during the last days of the intoxication, but this is usually a sign of the development of bronchopneumonia.

The pulse rate may be low in the early stages of the intoxication, but later in the course of the illness it becomes rapid. It is not uncommon to observe a rate of 100 to 120 per minute and in some cases of as much as 150 or 160 per minute. The action of the heart muscle is impaired. There may be no visible cardiac impulse and the heart sounds are feeble and distant. The combination of subnormal temperature and rapid pulse is most striking.

There is often no disturbance of respiration in the early stages of the intoxication, but toward the end breathing becomes difficult and labored, and there may be extreme dyspnea and irregular breathing, sometimes of the Cheyne-Stokes type, with all the accessory muscles brought into play. Later, as fatigue of the respiratory muscles develops, there may be partial or complete asphyxia and the most frequent immediate cause of death is respiratory failure.

There are very incomplete data concerning the results of the ordinary clinical laboratory tests in botulinus intoxication. As was stated above, examination of the urine shows no characteristic changes from the normal. Blood counts have been made in a few cases without revealing any typical blood picture, although the number of cases in which examination has been made is much too small to justify any definite conclusions.

In our series there are records of 8 cases where red blood counts were made, and in 7 of them the count was between 5,200,000 and 5,600,000 per c. c. In 15 cases leukocyte counts are recorded and the count varies from 7,000 to 20,400 with four below 10,000, 7 between 10,000 and 14,000, and four 16,000 or more. In all but two where differential count was recorded the polymorphonuclear neutrophiles were between 70 and 85 per cent. In at least one case where the leukocyte count was over 16,000 necropsy revealed the presence of bronchopneumonia.

Examination of the cerebrospinal fluid has been recorded in four cases. In one instance it was stated that there were 80 cells per c. c., but the type of cells was not specified. In the remainder the fluid was reported normal.

Blood pressure records in six cases showed systolic pressures between 120 and 140 mm. and diastolic pressure of from 80 to 90 mm. In another case it was recorded that the blood pressure was normal and in two that the systolic pressure was 120.

It has been suggested that intraperitoneal inoculations of white mice with the citrated blood of persons suffering from botulism might establish a differential diagnosis or the type of intoxication. European reports are available that in serum collected on the 4th, 6th, 9th, 16th and 25th days after the consumption of the poisonous food, injected into white mice, the presence of toxin was demonstrated. This clinical test was tried in our outbreaks at Pittsburgh, Pa., with negative results. In addition, there are in various outbreaks definite histories of people eating the poisonous food without any harmful results whatever. In such occurrences it is suggested that their blood sera should be tested for any possible circulating antitoxin to account for their seeming immunity. Of course, one is cautioned to remember that there may be a concentration of toxin in various parts of the suspected food, in which event it may have been consumed without harm.

The duration of illness in fatal cases varies greatly, although the majority of

victims die in from 3 to 6 days after ingesting the poisonous food. In a series of 173 fatal cases where data were available, 18 persons died within 48 hours after the food was eaten and 1 survived for 26 days, but 117 persons, or 67.6 per cent, died in from 3 to 6 days after ingesting the poison.

Death usually occurs from cardiac or respiratory failure. It has been frequently observed that the heart continued to beat for several hours after voluntary respiration had ceased, and cases are recorded when artificial respiration has maintained life for several hours after voluntary respiration had ceased. Usually there is terminal asphyxia with cyanosis, and occasionally the patient dies in a strangling spell. It is not uncommon that there may be apparent improvement in the general condition of the patient, but that death results from insufflation bronchopneumonia.

When recovery occurs, convalescence is extremely slow and tedious. The severity of the illness usually reaches its maximum within 10 days of the poisoning and improvement follows slowly.

The strangling and the difficulty in speaking and swallowing frequently improve first, but the muscular weakness and the disturbances of vision disappear more slowly. Many cases are recorded in which the patients were comparatively well within two or three months. The disturbances of vision in some cases are the last to clear up and may persist for months. There appears to be no permanent severe disability, although some patients complain of constipation after recovery has taken place.

MORTALITY

The recorded mortality of botulism in the United States is very high, 61.7 per cent, and is surprisingly uniform in the various areas included, viz.: California, 61.3 per cent; Washington, 69.1 per cent; and other portions of the United States and Canada, 60.9 per cent. There is very great variation in the mortality of different group outbreaks, however, ranging from zero, 10.3 and 12.5 per cent, respectively, to 100 per cent in reports.

In a series of 246 cases where data were available and of which 173 resulted fatally, it was found that 147, or 85 per cent, of the fatal cases were persons in whom the onset of symptoms occurred within 48 hours after ingestion of the poison. In many outbreaks there is indication that the time of onset of symptoms is directly dependent upon the amount of poison ingested, and this observation shows that the severity of the illness and the mortality rate is also directly dependent upon the same factor.

A comparison of the mortality among patients who have an initial acute gastrointestinal disturbance before the onset of the typical botulism symptoms with those in whom the botulism symptoms are the first to be manifested indicates that, contrary to expectations, the initial vomiting and purging does not materially affect the outcome of the intoxication. All the records of cases in this country do not contain the necessary data, but in 180 cases where data were available it was found that 71.8 per cent of those who suffered acute gastrointestinal disturbances and 73.2 per cent of those in whom there was no initial nausea or vomiting resulted fatally.

PATHOLOGY

There is no characteristic gross lesion by which botulism can be recognized at necropsy. The only constant finding is the marked congestion of the central nervous system and of the abdominal and thoracic viscera. There may be multiple hemorrhages around the base of the brain and upper part of the cord, and the brain tissues may be edematous and show scattered hemorrhages. The lungs are congested and often show areas of bronchopneumonia. The heart muscle is soft and flabby, the liver, kidney and spleen are hyperemic and all the parenchymatous organs are opaque and cloudy on section. There may be ecchymoses and hemorrhages on the serous surfaces and in the lungs.

On microscopic examination, all the tissues show marked congestion, and often the arteries, veins and capillaries are all engorged with blood. In the brain and meninges there are numerous larger or smaller perivascular hemorrhages around the distended vessels, and in the brain and other organs, especially in the lungs, there may be large hemorrhages which extend

beyond the immediate vicinity of the vessels.

The occurrence of cellular thrombi of the type first described by Ophuls are very often found in the tissues of patients in whom the progress of the intoxication has not been too rapid, but they may not occur when the duration of the illness has been very short. When present, they are very suggestive that death has been caused by botulinus intoxication, but, as was recently pointed out by Dickson, they cannot be considered pathognomonic of botulism. In a series of 12 necropsies of human victims of botulism, the tissues of 9 contained the typical thrombi, and of a large series of experimental animals which survived longer than for 48 hours after the administration of toxin, the tissue of the great majority also contained the thrombi.

In none of this series of human victims of botulism, nor of animals in which the poisoning was experimentally produced, has there been any indication of destruction of the ganglion cells such as was first described by Marinesco. Neither has there been any indication of perivascular infiltration with lymphocytes such as is characteristic of epidemic encephalitis, save in one case which has been recorded by Geiger and in which a very few lymphocytes were seen in the areolar tissues around a few of the blood vessels in the brain. There should be no confusion in the microscopic diagnosis between botulism and epidemic encephalitis, since perivascular lymphocytic infiltration is not a characteristic lesion of the former.

Nothing definite can be said as to the value of antitoxin in the treatment of botulism, although thus far no satisfactory results have been obtained. It has been shown by experiment that animals can be fully protected if sufficient antitoxin is given simultaneously with or within a short time after the administration of the toxin, but that the proportion of the fatalities rapidly increases as the interval between the administration of toxin and antitoxin is increased. A few cases were noted where animals recovered although symptoms of poisoning had appeared before the administration of the antitoxin.

Complete data concerning the administration of botulinus antitoxin to human victims of botulism in the United States are not available, but there are at least eleven outbreaks in which it has been used. In two instances it is known that a type B antitoxin was used in what was later proved to be a type A intoxication, and in three others the details concerning the administration of the antitoxin have not been published. There are six outbreaks, however, in which homologous antitoxin was administered, and concerning which the details of its use are known, and these afford the only reliable data at hand upon which to base any conclusions as to its efficacy.

In these outbreaks 31 persons were ill and 23 died. Seventeen of the patients died before antitoxin was available, and 6 succumbed after receiving the injections. One person recovered without having been given antitoxin and 6 recovered after it had been administered.

The mortality in these outbreaks was 74.2 per cent.

In only three of the outbreaks did any of the victims recover after receiving the antitoxin, and analysis of these shows that in every instance the more severely poisoned persons had died before the antitoxin was administered, and that those who were the more seriously ill when they received the antitoxin succumbed in spite of its use. In no instance was antitoxin available until at least four days after the poisonous food had been eaten, and in one instance it was not administered until the ninth day.

The only conclusion that can be drawn from these observations is that botulinus antitoxin is of no value as a therapeutic agent when given late in the intoxication. There has been no record of its administration sufficiently early to enable any comparison with results which can be obtained at will under experimental conditions, and none to indicate that it would not prove efficacious if given early in the intoxication.

In all instances of botulinus intoxication, therefore, the antitoxin should be administered as soon as possible after the consumption of the poisonous food. Time may be gained by using polyvalent serum or a mixture of both types of serum until such time as the type of the toxin has been determined. It should be given intrave-

nously, after the patient has been tested for hypersensitiveness, and, if necessary, desensitized. Large doses, at least 20,000 units, should be given and since it seems probable that there is no continuous formation of toxin after the poisonous food has been ingested, a single administration of the whole amount of antitoxin is preferable to repeating small doses. In any event, caution is advised in the handling of patients. Immobilization and quiet is indicated by the best means available, which the symptoms and the condition of the patient may suggest. It is almost unnecessary to call attention to those familiar with the disease in animals to the often observed fact that the merest roughing of the animal hastens materially the outcome.

It can be readily seen from this discussion that the time of administration of antitoxin is the most important factor in the treatment of human cases of botulism. While it is almost equally important to have confirmation of the type of the toxin causing the symptoms, yet from our knowledge ascertained in the epidemiological investigations of 114 outbreaks in human beings, intoxications with type B are exceedingly rare. Particularly is this true of preserved foods processed west of the Rocky Mountains. The following facts are now well known, namely: that the distribution of the spores of B. botulinus is practically universal, that the soil of mountain ranges yields more positive results than those intensively cultivated, or subjected to pollution, that the distribution of types seems not to be limited to particular regions, and finally that both types may exist in the same soil or specimen, the toxin of one only being demonstrable by neutralization tests with suitable antitoxins.

Rabbits, mice and guinea pigs are equally susceptible to the toxin, but mice are preferable for typing, results being readily obtainable in a few hours. By this time the patient can be desensitized and treatment begun with specific antitoxin.

Just as the known cultural tests for the isolation of the paratyphoid-enteritidis group of organisms should always be used as a routine procedure with suspected foods and excreta, or both, in general food poisoning, there should be used the simple methods of typing of toxin in the food suspected of causing botulinus intoxications. With the antitoxin now available, usually 0.25 of a c. c. of the liquid portion of the suspected food or its emulsion, centrifugalized or not, plus A and B antitoxin sufficient to make 1 c. c. each, mixed directly in the syringe and injected intraperitoneally into mice has been found sufficient both in dosage and dilution to obtain results in the time given above.

Though intoxications in animals just as in man are due to preformed toxins in the food, feeding and inoculation experiments in guinea pigs with detoxified spores, even when such spores have received additional saturation with specific antitoxin and been incubated, have yielded some interesting data. This may be briefly summarized as follows:

(1) There is no doubt that there is considerable variation as to the susceptibility of guinea pigs to botulinus intoxication with spores.

(2) There is a considerable difference of results in animals inoculated subcutaneously and fed with spores.

(3) Unquestionably spores may remain latent in tissues of animals for many weeks without the animal's showing any indication of the disease.

(4) It is comparatively easy to isolate the spores of B. botulinus from practically every tissue of the body after feeding or subcutaneous inoculation of the spores.

(5) There may be a quantitative relationship both of the feeding and subcutaneous inoculation as to the number of spores.

Finally, it is desired to reiterate that epidemiological and experimental evidence seems conclusive that Type A is the predominant type in outbreaks among human beings in America, and that Type A is probably the more toxic.

SUMMARY OF DENGUE RESEARCH, OCTOBER TO NOVEMBER 13, 1922*

By W. L. Holt, M.D.,
State Board of Health,
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(1) *Mosquitoes.*—Twelve were collected in the elevator of the Cotton Belt Hospital at Texarkana, October 17. There were six cases of dengue there at the time. All 12 were identified by Mr. Komp, of the U.S.P.H.S., as Culex fatigans. No attempts were made to transmit infection by bites of mosquitoes.

(2) *Patients' Blood.*—Ordinary blood smears were negative in all cases except No. 12, which see later. (Dr. T. E. Sanders, of Hot Springs, found just one spirillum in one thick smear out of 13 cases so examined by him.) Leukocyte counts on the author's cases ran from 12,600 down to 3400. All had a leukopenia except one, No. 5.

(3) *Blood Cultures.*—These were made on all cases seen but one, making 11. Noguchi's yellow fever medium was used, consisting of 3 parts Ringer solution and 1 part sterile human serum with 0.3 per cent agar. About 2 c. c. of the patient's blood were taken aseptically from the arm vein, put at once in the culture tube, mixed, and about an inch layer of sterile paraffin oil added to exclude oxygen.

Cultures rarely showed any turbidity after a week. Four cultures, however, showed a few round, dark staining bodies, all similar in appearance (cultures 2a, 5, 6, 9), which were taken for some micro-organism. They varied in size from 1 to 5 microns, being usually about 4 or 5 microns. A subculture in lactose bile from pig No. 5 showed some of these bodies with two nuclei.

(4) *Animal Inoculations.*—(a) Guinea Pigs: Blood from three cases, 5, 6 and 11, was injected intraperitoneally into guinea pigs on the 2d, 3d and 8th days of illness, respectively. Unfortunately one pig, Case 6, died accidentally of chloroform 24 hours after injection, and the third pig could not be inoculated until the blood had stood overnight in citrate. A culture from the blood at autopsy of pig No. 6 did show a similar organism to those found in blood cultures of patients. The third pig, Case 11, remained negative, probably showing that the organism had died out in the patient by the 8th day, as the transmission experiments of Cleland and Bradley indicated it did by 130 hours, or 5½ days.

Pig No. 5, inoculated from Case 5 on the second day, was the basis of most of my animal work. He ran a normal temperature (99.1 to 100.5°) until the sixth day, when he had 102.8°, but this was probably due to an abscess at the site of inoculation. He did not seem ill, and fever was gone next day. Nine days after inoculation this pig showed in the fresh blood from the ear numerous peculiar motile organisms of different shapes, which were found later in the pig and the rabbit inoculated from him.

Culture 5p, made in Noguchi medium from serum aspirated from this pig's abscess, showed globular bodies similar to those in patients' cultures. A lactose bile subculture showed many of these globules about the size of a red cell. Some were certainly protozoa, as they showed a cell wall and two nuclei. A Giemsa stain showed a body with 5 red-staining nuclei and several curved, spindle-shaped organisms.

Pig No. 15 was inoculated on October 23 with this culture, 5p, intraperitoneally. He also kept well until he developed a sore on his back from a bite, which became infected. He ran a fever of 102.6° on the fourth day and fever on the fifth and sixth until it healed. His blood showed a much richer growth of the protozoon than pig 5. Many different forms were seen at different times in the fresh blood in a wet smear.

On October 25, 48 hours after inoculation, I saw in his wet blood a small very motile oval organism and a few larger oval bodies of about 4 to 5 microns with distinct moving flagella or cilia. They were denser than red cells, had sometimes many coarse granules or nuclei, and moved independently. (Similar organisms were seen later in rabbit and patient's blood.)

On October 26, Dr. Hoge took blood aseptically from this pig's heart and put it in 2 per cent sodium citrate. Most of this was promptly injected intraperitoneally into pig No. 15. A drop examined then at 4:45 p. m. showed very many actively motile, long, slender bodies, somewhat like trypanosomes, of varying shape and length. Some were 15 microns long, the longest. They moved slowly from place to place, but had a rapid wriggling motion.

The very same specimen of citrated blood, after standing one hour at room temperature, showed very few of these slender bodies, but a corresponding number of round or oval granular bodies. Evidently the slender bodies must have contracted to the round or oval form, perhaps due to the citrate

The possibility of accidental infection of this pig from a trypanosome-infected rat was considered. Nearly all the other pigs in the animal room (six) were carefully examined and no organisms found in their blood. Also these trypanosome-like protozoa were not seen again in this pig's blood in spite of repeated trials.

On October 28 this pig's blood from the ear showed neither the long slender nor the round granular forms, but was full of very small granules, so small and active that it was impossible to determine their shape in wet mount.

(b) Rabbits: Rabbit No. 1, after the blood was found negative and temperature normal, was inoculated intravenously October 30 with heart's blood of pig No. 15. Like the pigs, the rabbit showed no symptoms, but five days later had the organism in his ear blood.

On November 4 his blood showed in wet mount all the various forms of the organism already seen

*Read in Section on Public Health, Southern Medical Association, Sixteenth Annual Meeting, Chattanooga, Tenn., Nov. 13-16, 1922.

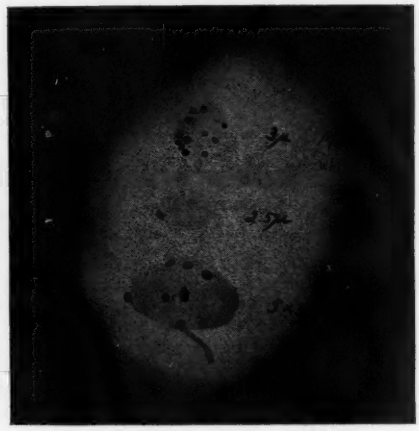
in pigs Nos. 5 and 15. Many of the parasites were flagellated, but none resembled trypanosomes.

Rabbit No. 2 was inoculated November 7 with 2 c. c. of ear's blood obtained nearly sterile from rabbit 1.

Rabbit No. 3 was inoculated intravenously with 1 c. c. of citrated blood 30 hours old, obtained by Dr. Beck, of Texarkana, November 11 from the arm vein of a very severe case of dengue at DeKalb on the tenth day of the disease. The man was at the time very ill. The rabbit was inoculated November 12. The citrated plasma of this case showed very many organisms at this time, alive and quite similar to those first seen in Case 12, mentioned below.

(*5*) *Organisms in Human Blood.*—I found distinct and certain organisms in human blood of cases of dengue for the first time at the Cotton Belt Hospital, Texarkana, November 10 and 11.

Case No. 12 was typical with a good rash, leukopenia of 3400, severe pains, nausea and no history of malaria. This patient was a nurse at the Hospital, where nearly all the employees had had dengue that fall. She became ill November 8 at 4 a. m. with severe headache and general pains, but no chill. She had sore throat, no cough, marked rash on the neck when seen on the third day, which she said was over most of her body. Her temperature ran as follows: first day, 102.4°; second day, 102.6°; third day, 99.2°; and fourth day, 98.5°. Age 24; Miss L. S. Holland.



Dengue protozoa blood smear of Case 12. Wright stain. Drawn, colored and photographed by W. L. Holt, December 11. Black dots are red nuclei. Cytoplasm of upper and lower forms is greenish yellow; of center one, pink. Sizes marked in print.

An ordinary blood smear was stained by Wright stain and carefully examined by me, by Dr. Hoge, Director of the Hygienic Laboratory at Little Rock, and by Miss Mildred Moss, an expert on diagnosis of blood for malaria. All agreed in finding no malarial parasites in this blood. Dr. Hoge saw a few inclusions in the red cells of various sizes from round bodies, about 1 micron in diameter, mostly with intensely red nucleus, up to a couple of large oblong bodies nearly filling the red cell. They did not show ring forms or brown pigment, and Dr. Hoge declared they certainly were not malarial organisms.

My chief find was made Saturday morning, November 11. In the citrated blood of this case, No. 12, which had stood overnight in the ice box, in the colorless cloudy plasma above the red cells I found in great abundance very similar protozoa to those seen in inoculated pigs and rabbits.

Most numerous were small ameboid forms, usually having one, sometimes two, long flagella. There were also a good many large round or oval bodies with twenty or more nuclei and distinct short cilia, and smaller round forms with one or two nuclei.

I make no claim that these polymorphous protozoa, which I have found in my inoculated animals and the blood of two patients, are the causal organism of dengue, but simply report my findings with the idea that they may be of some assistance to further research.

The facts that the inoculated animals were not injured by the organisms and that they seem quite too large to pass through a bacterial filter are very much against their being the true germ.

NOTE.—After making the above report I found by careful study of a stained smear of blood of Case 12 some very suggestive nucleated bodies rarely present, closely resembling the multinuclear protozoa seen in the citrated wet blood of the same case. Not being able to get a clear direct photograph of these bodies, I carefully drew and colored them, enlarged, and then made a photograph of the drawing, which is published herewith. These organisms looked quite different from platelets, staining differently; they had mostly greenish yellow cytoplasm and bright red, distinct nuclei.

SURGERY

RAILWAY, INDUSTRIAL, GYNECOLOGICAL, OBSTETRICAL AND UROLOGICAL

COLLOIDAL PREPARATIONS, ESPECIALLY COLLOIDAL SILVER CHLORID*

By Edgar G. Ballenger, M.D., F.A.C.S.,
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and
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If an ounce of silver nitrate is dissolved in a quart of aqueous solution of acacia and then slowly added to a quart of acacia water in which is dissolved three drachms of sodium chlorid, a milky white preparation is produced which is more potent as a germicide than pure carbolic acid, yet is non-irritating when applied to mucous membranes. Its toxic effect is so slight that spermatozoa can live and remain actively motile in it for 15 to 25 minutes. One cubic centimeter of it given intravenously to rabbits inoculated with Staphylococcus aureus sterilized the blood in 24 hours and cured the rabbits so treated. The controls died in from 48 to 72 hours with multiple abscesses of the heart, liver, kidneys, etc.

It is my purpose to discuss briefly the phenomena associated with substances in such a colloidal state as the silver chlorid and the processes whereby an active agent like nitrate of silver may be changed from an irritating solution to a non-irritating preparation, at the same time retaining an adequate amount of its germicidal activity.

A silver wire placed upon an agar plate planted with the Staphylococcus aureus prevents the organisms from growing immediately around the wire. Silver filings placed in a test tube containing water give off to the water a germicidal substance. The minute masses of silver chlorid, when in a colloidal state, give off a similar substance which probably accounts for its bactericidal activity. It is likely that the enormous increase in the surface provided by the minute subdivisions of the silver chlorid when in a colloidal state accounts for its relatively high germicidal coefficient.

There is a markedly selective bactericidal activity exhibited by this preparation of silver. Moulds and fungi will grow upon a solution stronger than carbolic acid, as regards the destruction of pathogenic organisms. To prevent this, we add about one or two drachms of carbolic acid to the gallon. In hot weather it also shows a tendency at times to ferment. It does not coagulate albumin and is not precipitated by chlorids.

COLLOIDS

The word colloid comes from the Greek word, kolla, which means glue. Colloids have certain definite characteristics which differentiate them from crystalloids, which we shall not discuss. We shall consider rather substances in a colloidal state, their preparation and preservation, especially silver chlorid.

Metallic, or insoluble substances, if minutely subdivided or precipitated in a solution which contains a colloid such as acacia, gelatin, etc., assume a peculiar form known as the colloidal state. The little masses tend to remain separate and are charged with either positive or negative electricity. They are constantly in motion and by bumping against each other remain uniformly distributed throughout the liquid in which they are suspended. They are easily visible through the dark field microscope. There is a tendency for them to coalesce and make bodies of large size which may finally become so heavy that they sink to the bottom and lose their motility. This occurs in from a few days to a few years, according to the content of the colloidal substance such as acacia or gelatin, which tends to keep them apart.

*Chairman's Address, Section on Urology, Southern Medical Association, Sixteenth Annual Meeting, Chattanooga, Tenn., Nov. 13-16, 1922.

It also depends upon the chemical character of the solution as to whether an active ingredient still remains chemically unsatisfied and whether the electrical balance between the bodies is about even.

PREPARATION

Without going into the subject deeply, we wish to give some of the practical points we have observed. Acacia has been found to be one of the best colloids; i. e., solutions containing it have a surface tension which is sufficiently great to hold these small masses apart for a longer time than do most of such glue-like substances.

The fineness of the bodies and their stability vary with the amount of the acacia in the solution, with the rapidity of agitation of the solutions when the preparations are made, with the concentration of the colloidal bodies and with the viscoscity of the solutions.

We are assuming that they are made by the precipitation method, for instance such as that of precipitating a solution of nitrate of silver with a solution of sodium chlorid. In each solution should be sufficient acacia to prevent the formation of large masses.

Invert sugar has been found to be of greater value in making the preparation thick, thus tending more to prevent these bodies from coalescing than ordinary sugar.

Professor Weems, Chemist at Emory University, also found that bile salts, the glycocholate and taurocholate of soda, are of great value and assist us in obtaining very fine colloidal bodies.

The type of the colloidal preparation to be made naturally varies with one's wishes. If it is intended for immediate use, the amount of stabilizing colloid and sugar or syrup need be small compared with the amount required if it is to be kept for a considerable period of time.

Generally speaking, we may bring any soluble substance into a colloidal state by precipitating it in a solution containing acacia. The colloidal bodies are smaller if both solutions contain stabilizing acacia, bile salts, etc.

If a very weak solution of nitrate of silver is precipitated with a solution of sodium chlorid without acacia, a milky white color is produced, and it remains in the colloidal state for a while. If stronger solutions are used without acacia, etc., a heavy flocculent precipitate forms and promptly settles to the bottom, leaving a clear solution above. It is to prevent this that the glue-like substances must be added to keep the bodies minute and thereby increase the surface of the insoluble substances which are held in the colloidal state.

As previously stated, from the surface of these minute, though visible masses, invisible ions are given off into the surrounding solution. These are definitely germicidal and relatively non-toxic and non-irritating even when applied to acutely inflamed membranes.

At first we were puzzled as to how apparently insoluble substances could exert a germicidal activity. That this is due to minute amounts coming away into solution we think is proved by the following tests: a silver wire was encased in a capillary glass tube and the tube was broken away from part of the silver wire. This was placed on an agar plate plated with staphylococci. The organisms grew close around the part covered with glass, but did not grow close to the exposed wire. This test, we think, disproved the statement we made in our preliminary report that these emanations penetrated thin glass. We are unable to explain the phenomena which caused our error unless a certain amount of the silver was fused at the ends of the capillary tubes in which we sealed the colloidal silver chlorid. They were immersed in fuming nitric acid to cleanse the surface and destroy the hay bacillus. They were washed in sterile distilled water and then planted on the agar plates.

If potassium iodid be used instead of sodium chlorid we obtain a light cream colored preparation which is silver iodid. It does not darken as does the chlorid when exposed to light, is more stable than the chlorid and less active as a germicide.

By precipitating an acacia solution of silver nitrate with salicylate of soda we obtain rod-shaped colloidal bodies. We have been unable to find previous reference to this fact in the literature upon colloidal preparations. The colloidal salicylate of silver is more difficult to prepare

than the chlorid or iodid, as the bodies are likely to be too large unless the proportions are exact. Here the value of bile salts is clearly demonstrated. If no bile salts are added, the rod-shaped bodies may be so large that they are inactive. If bile salts are added in small quanities, the bodies are smaller and actively motile; while if we add more bile salts, we may obtain a colloidal preparation with small round bodies which cannot be distinguished with the ultramicroscope from other substances in a colloidal state.

Benzoate of silver in a colloidal form is characterized by bodies which are quite large and look like cross sections of oranges. The addition of bile salts greatly reduces the size of the bodies.

If iodid of potash, sodium chlorid, salicylate of soda and benzoate of soda are all mixed in one solution with acacia and then precipitated with a silver nitrate solution, gradually added, we obtain the colloidal preparation of each of the substances formed in the order named. That is, all of the potassium iodid is taken up by the silver before any of the chlorid is combined with the silver, which in turn has a greater affinity for the silver than the salicylate and benzoate. As was previously stated, we believe the chlorid of silver is of more value as a germicide than the iodid, probably because it is an ill-balanced molecule and less stable. We have not tested the salicylate or benzoate sufficiently to express an opinion.

PRACTICAL APPLICATION

If finely sprayed into a room, colloidal silver chlorid may remain in the air for many hours as a fog. This, when inhaled, gives a peculiar metallic taste which may last for a considerable time, showing that a definite amount has entered the system by way of the lungs. This might be employed for the treatment of certain pulmonary conditions.

Tin foil may be used as an indicator to determine if there is any free silver nitrate in the solution after it has been prepared. If there is, the tin foil will immediately turn dark when wet with it.

All of the protein salts of silver, when observed with the ultramicroscope, show that the silver is in a colloidal state. This, perhaps, accounts for the fact that they all tend to be less effective when the solutions are stale.

What ultimately becomes of the ions which come away from the small masses of silver into solution we are unable to state. Probably they unite in some way with other bodies and thus increase their size.

The clinical results from colloidal silver chlorid in the treatment of urethritis are not strikingly better than the other remedies we are accustomed to use. In fact, many of our remedies are adequate from a germicidal standpoint. The relapsing cases and troublesome ones come from deep-seated foci not reached by the remedy no matter how potent.

We regret that the limited time makes it impossible to discuss intravenous injections of colloidal silver chlorid and other intravenous germicides.

There must always be a disadvantage in the use of colloidal preparations intravenously because they require substances like acacia, which is a vegetable protein, and every now and then gives a disagreeable serum reaction. For intravenous preparations, the minimum amount of acacia should be used and dextrose employed instead of invert sugar or syrup. Each solution is previously sterilized in an autoclave and after being prepared it should be filtered. The dose may vary from one to three cubic centimeters of a 1 per cent solution. If there is a leak around the vein, it causes a decided inflammation like that from arsphenamin.

Among the undetermined possibilities we might mention the fact that colloidal bodies may be taken up to come extent by the phagocytic lymphocytes, then carried to the inflamed parts, thus tending, perhaps, to concentrate the germicide at the point most needed. It has been observed at the Rockefeller Institute and elsewhere that endothelial cells in proliferating or chronically inflamed tissues are markedly phagocytic. This may further assist in concentrating the germicidal bodies where most needed.

GERMICIDAL CATGUT

We have been carrying on a few experiments with catgut, first soaking it in a silver nitrate solution, then when dried,

again soaking it in a sodium chlorid solution. By this means the silver chlorid is precipitated in the substance of the catgut so that subsequently the germicidal quality of the silver is available for a considerable period of time, as it is fixed in the catgut in an insoluble, though active form.

As you see from this report, there are many phases of this subject which have not been adequately investigated, and we hope others may interest themselves in this or related lines of work.

Some of these fanciful theories, of course, may prove of no value, but they give us something to think about and ideals to work for which ultimately may prove of value.

CORRECTION OF CLEFT PALATE*

BY W. A. BRYAN, M.D., F.A.C.S.,
Nashville, Tenn.

The age at which operative relief of cleft palate should be undertaken, if the surgeon may elect, depends upon the method employed by that surgeon. What is said in the following pages refers only to my own experience, and is intended to apply only to the operation or modifications employed in my work. It should be the privilege of any patient at any reasonable surgical age to obtain relief from this doubly hideous defect, just as in any other type of elective surgery. There is an age of choice beyond any question, and this age is, for closure of the hard and the soft palate, about twenty months, with the understanding that the harelip and the alveolar cleft shall have been repaired as soon as possible after birth, preferably at the age of two to four weeks. This is not intended to disparage those who have not been fortunate enough to obtain such relief early, for the advantages of repair are sufficient to justify correction of both palate and lip even to the age of middle life.

The reasons which justify the earlier operation on lip and alveolus and the later operation on the palate are of sufficient importance to warrant their enumeration:

A. (1) During the early weeks of life the bones of the face are preponderantly cartilaginous and may be sprung back into position by pressure. Later, when ossification is more advanced and the bones are less elastic, it often requires partial severance of the bone. This causes the bone to swing into position, as it were, on a hinge and tends to give a flatter front to the arch than when the os incisivum is forced into position.

(2) The disfigurement of these cases increases disproportionately as the child develops. If operation is done early this accession to the primary deformity is avoided.

(3) The nostrils mold more readily back into a normal shape, or more closely approximate the normal, in cases operated upon early.

(4) While a certain amount of disturbance may arise from eruption of the teeth in any of these complete cases, the interference with the operation is less if it is done early. It is not difficult to imagine that teeth erupting from a corrected arch, the relation of whose parts at least approximates normal, will have more natural direction, position and occlusion than teeth growing wild from an unclosed cleft which has no restraint on their growth and no function.

B. (1) The cleft palate, hard or soft, or both, should be corrected at the age of 18 to 20 months, not because it cannot be done later with greater mechanical success and less risk of failure, but because better function can be expected if the closure is done before the child begins to form word ideas inaccurately. Once these ideas have established themselves, although the child may have a body mechanism with which to form words accurately, he will do so only approximately well, and as soon as he forgets to watch every utterance he lapses back into the old style almost as surely as a washed sow returns to her wallowing. Yet I have operated upon one woman past forty who in a year's time gave no suspicion of the former defect in her speech.

(2) The tissues are so friable in the earlier months of life that it is very difficult to get union throughout, and besides the combined operation on lip and mouth would, in my judgment, prove to be too

*Read in Section on Surgery, Southern Medical Association, Sixteenth Annual Meeting, Chattanooga, Tenn., Nov. 13-16, 1922.

much surgery in an appreciable percentage of cases.

The most important cosmetic feature concerns the primary operation and specifically the reposition of the os incisivum to restore the alveolar arch. Too far forward this bone gives a prognathous effect, and too far backward it is worse still, giving a countenance bad enough in full face and hopelessly hideous in profile. Another feature of the replacement of the os incisivum in cases of bilateral cleft of the alveolus is that it must be fixed in such position that the teeth will grow in the right direction, neither pointing backward nor too much forward, otherwise occlusion with the lower incisors will not be possible and the appearance of the mouth not good. In practice this item is cared for by avoidance of too great downward and backward rotation of the os incisivum on its transverse axis, and by fixing the bone after reduction so that no further rotation will be possible.

Fig. 1 Fig. 2

Fig. 1.—Outlines of hard and soft palate.
Fig. 2.—Bifid uvula.

Fig. 3 Fig. 4

Fig. 3.—Cleft involving part of soft palate.
Fig. 4.—Cleft of whole soft palate.

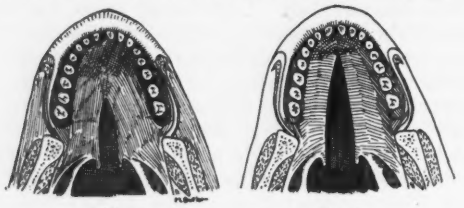

Fig. 5 Fig. 6

Fig. 5.—Cleft of soft and part of hard palate.
Fig. 6.—Cleft of entire palate.

At the second operation, whatever the age of the patient, there are certain conditions which must be complied with if even moderately uniform success is to be had.

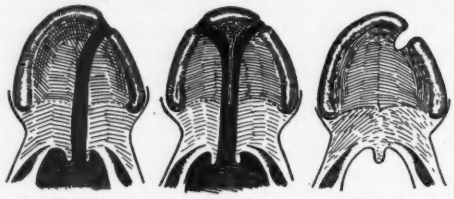

Fig. 7 Fig. 8 Fig. 9

Fig. 7.—Complete unilateral cleft palate.
Fig. 8.—Complete bilateral cleft palate.
Fig. 9.—Alveolar cleft.

These conditions are not special for cleft palate work. They apply very largely in general surgery and particularly in plastic surgery. The ease with which they are overlooked, the difficulty with which they are applied with judgment, are two causes of failure to get union in these cases.

Fig. 10. Fig. 11 Fig. 12

Fig. 10.—Transverse section of hard palate.
Fig. 11.—Transverse section of unilateral cleft.
Fig. 12.—Transverse section of bilateral cleft.

(1) It is necessary to have the edges raw throughout on both sides of the cleft so that only raw tissues will be in contact after suturing. This sounds very simple, but I am convinced that failure to do it is a more common cause of non-union than we have heretofore believed. In cutting the mucous membrane away at the juncture of hard and soft palate it is a very

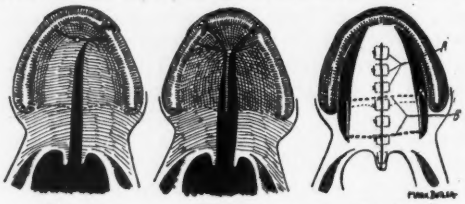

Fig. 13 Fig. 14 Fig. 15

Fig. 13.—Result of first operation on cleft. Unilateral type.
Fig. 14.—Result of first operation on cleft. Bilateral type.
Fig. 15.—Result of closure of cleft hard and soft palate.
A. Mattress sutures. B. Relaxation suture.

easy matter to leave a strip of mucous membrane so that it will lie between the approximated edges.

(2) In addition to raw edges, it is necessary to have sufficient width to the raw approximated edges to give reasonable chance for union. This may be accomplished in the soft palate by cutting the margin of the cleft away far enough from the edge to develop a raw surface the full thickness of the palate. This is probably responsible for failures, in an effort to sacrifice as little tissue as possible. The necessary width of raw surface may also be had by splitting the soft palate along the edge of the cleft. Occasionally I have found it advantageous to combine these two methods.

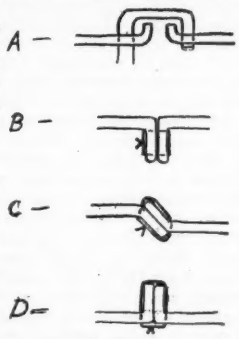

Fig. 16.—A. Mattress suture inserted. B. Mattress suture tied, approximating two raw surfaces. C. Round suture approximating mucous to raw surface. D. Round suture, approximating two mucous surfaces.

In the hard palate the mucoperiosteum is raw over its whole upper, or palatine, surface. Consequently no thickness can be developed, because it is not there. This deficiency is made up by approximating the edges in such manner as to infold them toward the mouth. If relaxation is sufficient, no difficulty will be encountered on this score.

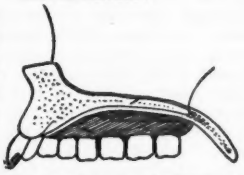

Fig. 17.—Showing juncture of hard and soft palate.

(3) Relaxation is perhaps more necessary in cleft palate work than in any other class of plastic surgery. In most instances of plastic surgery some additional means may be devised whereby relaxation of the tissues may be established at, or maintained subsequently to, the time of operation. But in cleft palate work the greater the dependence upon immediate and thorough relaxation the more satisfactory the ultimate results. This can be accomplished only by thorough and careful dissection of the flap on either side until without tension it can be drawn across the width of the cleft.

(4) Sutures employed in my work are exclusively catgut, preferably chromic, mattress and close together. The mattress suture is used in preference to the round suture, because with the mattress suture one cannot fail, with the most ordinary care, to know that raw surfaces are approximated. With the round suture it is impossible to avoid getting an occasional approximation of raw to mucous surface or of mucus to mucous surface. Either of these means certain failure at that point.

One other point must be impressed in regard to sutures, which seems to be a rather frequent shortcoming in surgical work. While the mischief done by it in general work is often not so obvious, in plastic work frequently, and in cleft palate work universally, it causes trouble. This point is the tightness with which the tissues are grasped in the encircling suture. It is easy to get the habit of tying sutures tightly as if they were ligatures. In ligation the purpose is to cut off circulation in the vessels embraced. In sutures, the purpose is to approximate the tissues, cutting off as little of the circulation as possible, so that these vessels may perform their vitally important work of healing. If the sutures are close together and tight there must result complete failure. If one is too tight there will be a corresponding failure.

(5) After the operation liquids only should be given, and all care should be exercised to avoid use of the muscles of the soft palate. Sneezing, coughing, crying, talking and the curiosity of surgeon, nurses, assistants, parents, friends, to see how the wound is looking are among the finest measures I know to guarantee a failure.

Leave the wound alone and let it heal. If failure, partial or complete, occurs, try again.

DISCUSSION

Dr. J. Shelton Horsley, Richmond, Va.—The principles Dr. Bryan has laid down are much more important than carrying out his exact technic. Mobilization, so that the parts come together with no tension, is absolutely essential. The incision is made as close to the alveolar arch as possible. Sometimes I find in cases that have

been operated upon that the periosteal elevator makes too much trauma, and in those cases I use a sharp-pointed knife, slipping it in and cutting the flap.

In some details I differ slightly with Dr. Bryan. Instead of the suture material he employs I use fine silver wire. Every now and then we rediscover things and I have recently been more impressed with the real research ability of Dr. Marion Simms than I was before. If you use the fine silver wire he first used in vesical fistulae and put the stitches in with just a simple interrupted stitch, with complete relaxation, they can be untwisted if necessary or they can be made more snug with a simple twist of the wrist. They are also antiseptic and I leave them in for two weeks or more. Another advantage is that I think I can apply them more rapidly than I can the catgut or silk, and of course it is not a culture medium.

We frequently use too much "banjo work" about these cases. I have tried various methods of relaxation stitches of the soft palate, but have gone back to the principle Dr. Bryan brought out: to obtain good exposure and broad raw surfaces on each side, then put in as few stitches as possible and tie them just tightly enough to secure approximation. In some cases where there is tension it is well to pack one side with iodoform gauze in the relaxation incision for a few days. It is not well to pack both sides, for that interferes too much with nutrition. Packing on one side, while it obstructs nutrition a little, will still permit good drainage and good nutrition.

Dr. C. W. Allen, New Orleans, La.—All of us who have had experience in this field are constantly changing our ideas. The plan which I now use I have been following for the last few years. The general remarks the Doctor made should guide us in any procedure. Absolute relaxation of the flap is one of the essentials. One change I make is in regard to the time of operating. I usually begin as early as the child can stand any trauma, usually at four or five months. The operation is done in different stages. If there is a complete cleft I never attempt more than the soft palate at the first operation. I inject an adrenalin solution at the anterior palatine foramen in front and at the posterior palatine behind. The adrenalin is always put in an anesthetic solution for the control of hemorrhage. Sponging the patient's throat out is a great nuisance. In this way you can work much more rapidly and save blood to your patient. I never close the lip until the last thing: the soft palate first, next the hard palate and then the intermaxillary portion. In closing the lip before the intermaxillary portion you do not have the same opportunity for approximating the bones. You find in getting back in the hard palate you have difficulty in closing that small sinus-like opening, and often you have a little leak which is difficult to get at. I have adopted silver wire exclusively for suture of the palate. I find the patients will break the line of suture with other things. You cannot stop it, but if you put in a little silver wire you get results. It may be a little hard on the child at the time, but for the future results it is best. You hold both ends of the wire with a pair of forceps, slip another along the wire close up to the palate, holding the wire here while with the first forceps you make a few turns, allowing a piece a fourth of an inch long to project down. No child will put its tongue on that kind of suture.

I wish to call attention to a method I first saw used by our chief, Professor Matas, and that is used just after birth. Dr. Matas has devised a strong steel spring an inch or so wide that goes around the child's head. It is held in place with a cap and has two pads that fit under the malar prominence. The child wears this for months and it is wonderful to see the amount of approximation that can be brought about by this means. The gap is often reduced one-half by the time you are ready to operate.

Another thing is to keep these cases clean. I found that a small sized vaginal douche nozzle acts nicely. The advantage is that all the openings are along the side and you can irrigate with boric acid or anything you wish. It is well to do this a dozen times a day, if necessary. It should always be done after nursing.

Dr. Joseph E. Johnson, Memphis, Tenn.—I cannot agree with Dr. Bryan on the suture material he uses, catgut. It seems that catgut swells and makes a large opening in the tissues, and is a bacteria media. I have been in the habit of using either coarse horse hair or very fine silkworm gut suture. As has been brought out, the main thing is not to tie too tightly. With the horse hair the great advantage is that since it is elastic and not very strong, we cannot tie it tightly. The horse hair sutures have a tendency to come untied, but this can be overcome by putting in a few extra knots. This makes a rough surface for the tongue, which the children will avoid.

The high mortality among these children comes either from respiratory disease from having the mouth wide open, or from nutritional disturbance, through inability to swallow. They learn to let milk run down their throat and get it down in some way, but when the lips and nose are not closed they have not the power of suction which they need. I am in the habit, even during the first ten days of life, of pressing the jaws together with my thumbs and putting in a single wire which will hold the alveoli together and bring the lip and nose together at this time, leaving the cleft palate until a year or so later. They do much better in this way on account of their better nutrition.

There are two or three points that we must watch: first, we have no epithelium in the nasal side of our flaps from the hard palate. A good approximation is what we want.

In dealing with a cleft that involves a part of the hard and the soft palate, if we make the incision a little lateral, enough to allow the two epithelial edges to turn in and approximate on the nasal side and by long lateral relaxing incisions, we can slide the flaps across it and make an approximation, thus giving epithelium on both nasal and buccal surfaces. It is the epithelium that heals quickly and holds the flaps together. The soft tissues granulating together would not hold. I would insist upon the early closure of the alveolar process and the lip and nose. Even if you do not get the

lip perfect when these children are young, the advantage of the closure is enough to justify a shortening up of the lip at the time we do the cleft operation. I see no advantage in doing a partial cleft and dividing the operation into two stages. The only time that I would fail to draw a cleft together is where it would endanger too much the anterior blood supply. In that case I would leave a notch of the palate not in position. Later I could divide the whole thing and swing it around after the circulation was good from the other direction and after we had approximation from there back.

Another thing is that these children are subject after ether to an acidosis which I have learned to fear. I never touch them except when they are in the hands of a man who is competent to feed babies and take care of them. We do not operate upon babies who have an acid stool. Most surgeons do not know baby diseases and we must have a man who knows how to take care of them.

Dr. Bryan (closing).—The man who does cleft palate work does not know when he is going to change his method. We have all used lead plates and packing and all that, but underneath the whole thing, and that was the point of my paper, there are certain simple principles that must be followed out. If one man prefers to do the cleft first I have no objection. I prefer to do the front of the mouth first. If one man wishes to use silver wire I have no objection. I am getting just as good results with catgut as I could get with silver wire. It is a matter that you have to decide for yourself. I think we must often do two or three operations upon these clefts. I think it better to do the lip and the arch of the mouth or alveolus first. There is one objection; that you stand much less chance of doing the inside work if you do the front of the mouth first. If you make them look presentable and kissable they may not return for the completion of the inside work. That is the best reason I know for doing the inside work first.

RETROPERITONEAL CYSTS, WITH REPORT OF A CASE*

BY J. KNOX SIMPSON, M.D.,
Jacksonville, Fla.

If we leave out of consideration the solid tumors which occur in the retroperitoneal space, such as tumors of the kidney, the suprarenal gland, and the lymph glands (sarcoma and metastatic carcinoma) and still further eliminate the mesenteric cysts which have spread out the leaves of the mesentery and dissected up the posterior peritoneum, we have a comparatively small number of retroperitoneal growths falling into the class of true retroperitoneal cysts.

The origin of these cysts is rather obscure, the limited number reported in the literature having been ascribed usually to one of two origins: either from the remains of one of the fetal structures such as the wolfian body or duct or mullerian duct, or from some part of the retroperitoneal lymph system.

I have recently seen one of these cysts, which I wish to report.

Louise C., of Cocoa, Fla., a patient of Dr. Robert Schlernitzauer's, a child of six years, was referred to me on April 4 on account of a symmetrical enlargement of the abdomen which had attained such size that her respiration was being seriously embarrassed.

The family history was as follows: Her father and mother were living and well. Two brothers, 10 and 3 years of age, and one sister, 13 years of age, were in good health.

Past History.—The child was a forceps delivery, breast-fed, normal baby, with the exception of the fact that she had a congenital spina bifida, with a small, flat post-sacral meningocele. Her babyhood was normal in every way until she was two years of age, when her mother noticed that her abdomen was rather prominent. The abdomen continued to become gradually more prominent until the previous year, during which time the enlargement became much more rapid. For the preceding six weeks the mother stated that she had noticed that the abdomen had become much harder than it formerly was, and the child had for the first time been complaining of a sense of fullness and discomfort. She had become quite short of breath on exertion and ceased to be very active and playful. The child had always looked rather pale. She had had a good appetite. The bowels moved regularly. She slept well, and aside from the abdominal discomfort, seemed perfectly well. She had had no symptoms referable to the genito-urinary system except a very slight white vaginal discharge which had been present since birth.

Examination.—She was a rather well nourished female child. The skin and mucous membranes were pale and the lips somewhat cyanotic. The teeth were badly decayed and tonsils normal. The chest was normal in shape except that the costal angle was widened and the costal border flared on account of the abdominal enlargement. The lungs were negative. The heart was slightly enlarged and the beat rather tumultuous. The pulse rate was 120. The heart's action had apparently been considerably embarrassed by upward pressure on the diaphragm.

The abdomen was symmetrically enlarged to more than twice the normal size. There were numerous dilated radicals of the abdominal veins to be seen under the skin. Palpation revealed a hard, round, smooth tumor mass filling the whole lower abdomen and extending upward to a point

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half way between the umbilicus and ensiform. The tumor gave to the palpating hand the sense of deep-seated fluid under tension.

Rectal examination gave no additional information. The tumor could be felt with the tip of the examining finger. Neither the uterus nor adnexa could be felt. The external genitals were normal. Catheterization was done and three ounces of clear urine obtained, the size of the mass not being affected.

There was a spina bifida present, and a soft, flat post-sacral meningocele about two inches in diameter, which did not increase in size nor become tense upon any expiratory effort which the child made.

Fig. 1.—Cross section of the abdomen showing the extent and relations of the cyst lying behind the posterior peritoneum.

The lower extremities were normal. There were no enlarged glands in any of the superficial groups.

The blood examination was normal except that the hemoglobin was only 75 per cent. The Wassermann reaction was negative. The urine examination was negative.

Diagnosis of large ovarian cyst, probably a dermoid, was made, and operation was advised.

On April 8 the child was operated upon at St. Luke's Hospital, under ether narcosis. A midline incision was made from the umbilicus to the symphysis. Inspection showed a large retroperitoneal cyst the size of a large grape fruit, filling the lower abdomen, crowding the small intestines, stomach and transverse colon up into the upper abdomen, and the uterus and adnexa forward under the symphysis. Neither the cecum nor the sigmoid could be seen. The uterus and adnexa were examined and found to be normal.

The posterior parietal peritoneum, covering the cyst anteriorly, was incised and dissected away from the cyst wall. A trochar was then inserted and 45 ounces of a rather thick brown fluid evacuated from the cyst cavity. The cyst wall which was about one-half inch thick was found to be densely adherent posteriorly to the aorta, vena cava, iliac vessels, ureters, and vertebral bodies. The left ureter was dilated to the size of my forefinger. The removal of the sac was a very difficult and tedious procedure, the adhesions being so dense that sharp dissection was necessary to free it from the great vessels. This was particularly true where the cyst wall dipped over the promontory of the sacrum into the pelvis.

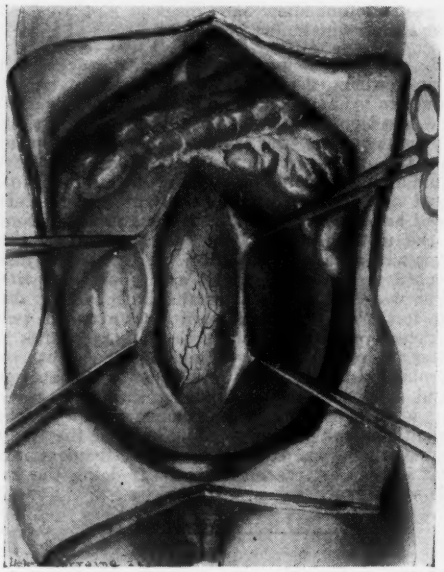

Fig. 2.—Anterior view of the cyst with the posterior peritoneal covering incised.

A good bit of blood had been lost from the oozing of the large raw retroperitoneal bed of the cyst at this stage of the operation and the child was not in particularly good shape, so the remaining pelvic portion of the cyst sac was left in place. The abdominal portion was excised, the posterior peritoneum closed around it, and the pelvic portion brought up to the abdominal wall and packed with gauze. The remainder of the incision was closed in the usual manner.

The child had a smooth convalescence without incident.

On the tenth day after the operation she was taken to the operating room, and with a short anesthetic the lining of the remainder of the sac was quickly and easily shelled out and a loose gauze pack inserted.

The child left the hospital on May 1, 22 days after the operation, with a clean granulating pocket, almost obliterated. The wound healed en-

Fig. 3.—Fluid has been removed from the cyst and the sac is being dissected out of the retroperitoneal pocket. Note the distended left ureter.

tirely two weeks later and has remained healed, the child being apparently perfectly well. A let-

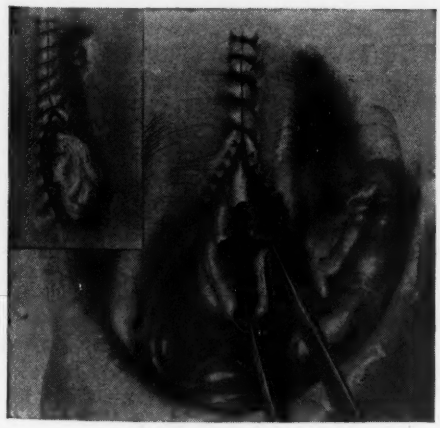

Fig. 4.—The major portion of the sac has been removed, the posterior peritoneum closed around the base of the sac and the sac brought up and sewed to the abdominal wall and packed.

ter a week ago from her mother stated that she was going to school and in splendid health.

A part of the resented sac was submitted to Dr. G. S. Graham, of Birmingham, Ala., for pathological study, who submitted the following report:

Gross Description.—The specimen consists of several masses of fibrous material having the appearance of pieces of a cyst wall. One surface is fairly smooth; the other is covered in places by a membrane-like layer of soft yellowish material. One of the masses shows a much thicker formation of this soft friable surface material, the layer reaching a thickness of 3 to 4 mm.

Fig. 5.—Lateral view of the patient before operation, showing the extent of the abdominal enlargement.

Microscopic Description.—Sections show a cyst wall made up of dense fibrous material. Its outer margin is compact, with few nuclei. The inner portion is somewhat looser and more cellular. The inner surface or cyst lining shows a superficial deposit of necrotic material with numerous leukocytes, many of which are disintegrating. Within the loose fibrous tissue of the inner wall and mingled with the necrotic material of the surface are frequent clear spaces outlining fatty acid crystals, many of which have been enveloped

in foreign body giant cells. No traces of epithelium are present. The wall contains occasional blood vessels and there is a moderate amount of old blood pigment occurring as brownish granules, particularly in the looser tissue of the inner portion of the wall.

Sections from the thicker portion of the wall mentioned in gross description show again a denser outer margin. The inner portion is made up of a loose fibrillar tissue with frequent cells. These are usually spindle-shaped, but occasionally more or less triangular or stellate. The looser tissue alternates with bands of denser fibrous tissue. There are occasional deposits of fatty acid crystals along the surface and in the inner zone of the wall, superficial areas of necrotic ma-

Fig. 6.—Patient showing abdominal scar three months after operation.

terial with many polymorphonuclears, and scattered throughout a considerable amount of old blood pigment granules. No traces of epithelium can be found.

Microscopic Diagnosis.—Fibrous cyst wall with slow necrotic changes of the inner surface.

Comment.—This is evidently a true retroperitoneal cyst. Unfortunately it fails to show any microscopic characteristics that help us much in explaining its origin. What little histology we have in the present tumor inclines me to the belief that this is a cystic expansion of a persistent remnant of the fetal urogenital tissues. This is vague, but I can come no closer to it.

This case has been of interest to me:

(1) Because of the rarity of these cysts.

(2) Because of the question which arose in the diagnosis of a possible connection between the post-sacral meningocele and the cyst.

(3) Because of the fact that it emphasizes anew the advisability and propriety of doing safely in two stages certain operations which cannot safely be done in one.

DISCUSSION

Dr. Frank K. Boland, Atlanta, Ga.—I have a somewhat similar case which I operated upon last week in a colored woman about thirty years of age. This was not a true retroperitoneal cyst, although it appeared to be so. I believe it was a cyst of the broad ligament which had pushed up to the diaphragm, pushing the peritoneum in front of it. At the time of operation it contained four gallons of clear fluid.

This fluid is usually brown or straw-colored, but in this case it was as clear as water. We measured three and a half gallons and probably half a gallon was lost. This had been diagnosed an ovarian cyst, but we found it was retroperitoneal. We could easily separate it out by peeling away the peritoneum. It came out easily, there was no attachment anywhere, and it was necessary to tie only a few veins that spread into it. There was no pedicle. She had four or five fibroids in her uterus and it would have necessitated a hysterectomy to remove them, but we had the good judgment to leave the fibroids alone, for she had stood the operation well and we felt that the fibroids could be taken care of later if necessary.

THE POST-OPERATIVE CARE OF URINARY CASES*

By Arthur L. Chute, M.D.,
Boston, Mass.

It is my belief that in no class of cases is the after-care more important than in operative urinary cases. It not only makes the greatest difference in the rapidity and comfort of the patient's convalescence, but often I believe it is the determining factor in whether or not he gets well. While it would be quite impossible for us to consider this subject in its entirety, there are certain points regarding the post-operative treatment of cases of this sort that I feel

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are especially important and which I wish to present for your consideration today.

The point that I believe is of the greatest importance is the post-operative management of the renal function, and I shall consider this first. No matter how careful we have been of our pre-operative treatment, no matter how well the kidneys have been working, as indicated by our functional tests, no matter with what care we have selected our anesthesia, there are a certain number of urinary cases in which operation is followed by a dangerous diminution of the renal function. The recognition and treatment of this, I believe, constitute the most important point in the post-operative care of urinary cases.

This condition is seldom met in general surgical cases. Its occurrence is almost wholly limited to urinary surgery since general surgical cases rarely show any element of back pressure, a factor which greatly predisposes a kidney to this post-operative shutting down. One seldom sees this post-operative interference with the renal function, even in urinary cases, unless there has been long-standing renal back pressure, such as results from obstructive disease of the lower urinary tract, as, for instance, that seen in stricture, prostatic obstruction, and such tumors of the bladder as cause obstruction to urination.

It has seemed to me that the process on which this post-operative renal insufficiency depends is, in its commonest and least complicated form, simply a passive congestion, the result of circulatory changes that follow the removal of the back pressure against which the kidney has been forced to accustom itself to work. It is evident that back pressure from an over-distended bladder is transmitted to the kidneys even through ureters that are not dilated. That this interference with the renal function may be the result simply of the removal of back pressure seems probable from the frequency and sometimes the rapidity with which it follows the suprapubic opening, under local anesthesia, of a bladder overdistended with uninfected urine. While this passive congestion may be the only process present in a considerable number of cases of this post-operative insufficiency, I believe that this passive congestion is often complicated by a renal infection, either a recrudescence of an already existing pyelonephritis or by a new infection. Finally, I believe that in some cases where the patient has had ether there is engrafted upon either the passive congestion alone or the combination of the passive congestion and pyelonephritis a toxic process due to the injury that ether is known to exert on injured renal cells, as evidenced by the conditions that we see resulting from the administration of ether to patients with nephritis. There is indeed suggestive evidence that renal cells do not necessarily have to be injured to suffer from ether.

As a result of this injury to the kidney, no matter what the type of injury is, the kidney fails to do its usual excretory work and the patient becomes toxic, due to the accumulation in the body of waste products. The condition is usually evidenced by a dry tongue, foul breath, nausea and vomiting, hiccough, soft distension, delirium, and finally coma and death—surgical uremia. The blood examination shows an increase in the non-protein nitrogen and urea nitrogen, evidence of the retention of waste products.

We naturally look for an explanation of this condition and clinical observations make it seem probable that the explanation is that kidneys in this condition cannot strain the waste products from a blood of normal concentration. That these kidneys are not worn out but are simply temporarily incapacitated seems proved by the fact that in instances of this sort, when very little urine is being excreted, the introduction of fluid into the blood stream will often start a free excretion of urine, as though, while the injured kidneys could not handle a concentrated blood, they could handle very easily a more dilute one.

The recognition of this condition, which ordinarily develops one to three days after operation, should be easy, but my experience has been that it is often looked upon as something else: sometimes as delayed shock, sometimes as hemorrhage, since there is so often a little oozing in operations of this type; again it may be considered as some vague cardiac complication. The recognition of this condition is important because, though often fatal if not

recognized, the outlook is fairly favorable if recognized early and treated vigorously. As a help to the early recognition of this condition I insist upon the keeping of a urinary chart in all post-operative cases: a diminution in the amount of urine is an early, if not the earliest symptom. Vague symptoms, such, for instance, as soft distension of the abdomen, should arouse our suspicion, and if this is found in the presence of a small excretion of urine, it is very suggestive of insufficient renal excretion. The same may be said of hiccough. Both of these conditions will ordinarily be remedied by the introduction of large amounts of fluid.

To combat this type of renal insufficiency water must be introduced into the circulation in large enough quantities to allow the kidneys to have a sufficiently dilute or non-viscid blood so that they can extract the waste products from it. This may be accomplished in the mildest cases by pushing water by mouth, a glass an hour, when the patient is awake. Because of the nausea and vomiting it is not, however, of use in the more marked cases. The use of salt solution by rectum is helpful in mild cases, but in cases where the condition is at all marked we must have recourse to salt solution under the skin. This must be given in such amounts as are necessary to allow the injured kidneys first to disintoxicate the patient and thus to keep him free from toxicity, and for so long a time as the kidneys need this help. In this connection it must be remembered that we have kidneys suffering from temporary disability, the probable duration of which is from a few days to a week, but which may go for much longer, since kidneys whose cells are incapacitated by an inflammatory process or a toxic degeneration do not recover as quickly as those simply embarrassed by a passive congestion. Our object must be to keep the blood dilute until such time as the kidneys have sufficiently recovered to handle a blood of normal concentration. This may mean giving a patient 750 to 1000 c. c. of fluid three times a day for days and even weeks. I have had to have it given three times a day for four weeks before a patient, now living and well, could get along without it. There is no definite indication of the amount to give, whatever is necessary to disintoxicate the patient and to keep him free from toxicity. In one case the amount given was such that the patient excreted 463 ounces of urine in one 24-hour period. This was an unprecedented amount in my experience, but it may be necessary to get the output up pretty high to disintoxicate some patients. The time over which it must be given is not to be reckoned in days or weeks, but until the kidneys can handle a normal blood. If one stops too soon, there will be a relapse; usually all that is necessary under such conditions is that one take up the treatment again. One should remember that the renal condition is a remediable one; that if the patient can only be tided over for a time his kidneys will take up their work and he may go on for years in good health.

In some patients the giving of enough fluid so that embarrassed kidneys will be able to keep a patient free from toxicity will be more than the patient's heart can stand. The first sign of this will usually be edema of the scrotum, though I have seen instances where the first intimation was an acute cardiac dilatation. The appearance of edema is evidence that the limit of the patient's ability to handle water has been reached. In cases that show any evidence of valvular disease or muscular degeneration digitalis and other stimulants should be started early. Cases of this sort often require the most careful handling to get enough fluid into the body to permit the kidneys to carry out necessary excretion and yet not to put a greater burden on the heart than it can bear; occasionally this cannot be done.

I cannot help saying just one word about the prophylaxis of this condition, in so far as it depends upon ether, for it has seemed to me that the worst cases have followed the use of ether; that is to recommend the substitution of spinal anesthesia for ether in all operations for obstructive conditions about the bladder outlet; an entirely feasible thing, I believe.

The above condition seems to me by all means the most important that we have to meet in the post-operative care of urinary cases, and for this reason I have gone into it with a good deal of detail.

Many of the operative conditions with which we have to deal in urinary surgery demand drainage. I would say, in fact, that the great majority need it for one reason or another: some because there is suppuration; others because the operative field has been contaminated, some again because of hemorrhage. Drainage is so necessary a part of urinary surgery that its careful post-operative management seems to me to be of the utmost importance.

It is my experience that in spite of its importance many men have no well formulated rules for their guidance as regards the management of drainage and act often from impulse rather than from any definite plan.

The post-operative management of drainage must necessarily depend somewhat upon the purpose for which it was used. Thus we use drainage in some cases to control bleeding, while in other cases, and these constitute by far the greater number, we use drainage because of the presence of suppuration or because of a fear that a wound has been contaminated. In certain other cases the object of drainage is to put an organ temporarily at rest. Naturally the management of drainage differs somewhat according to the purpose for which it is used.

Drainage for the control of hemorrhage is even used in different ways. In some cases, more especially where cavities like the bladder or kidney pelvis are involved, drainage by means of tubes is employed. It accomplishes its end first by putting the organ at rest and second by carrying away any blood as fast as it escapes from the vessels. This prevents distension of the cavity by clot, which in turn tends to open the mouths of the oozing vessels and continue the bleeding. This drainage does not exert any positive hemostatic action on the open-mouthed vessels, but by keeping the cavity free from blood and at rest, it gives Nature the best chance to seal the vessels. The importance of this method of controlling bleeding has been especially impressed upon me by several instances in which it was not used. These have been for the most part cases of nephrotomy that have been closed without the safety valve that a small drainage tube gives, with the result that they have oozed until it has been necessary to open the wound and either do a nephrectomy or reclose the kidney after providing proper tube drainage for the pelvis. In these cases the kidney pelvis has been distended with clot; clots have protruded from the edges of the kidney incision; the whole condition due, I believe, to the fact that the ooze was not carried away as fast as it accumulated, which led to distension of the cavity with clot and the continuance of the bleeding. Drainage of this sort, which, as I have said, is ordinarily by tube, may usually be removed as soon as the urine is pale red, though it is safer to wait until it has ceased to be red.

When a cavity has been packed with gauze to control more serious bleeding, usually a sharp venous ooze, it is wise to let the packing remain for a time after all evidence of bleeding has ceased, to be sure that the vessel mouths have been well sealed; the removal of gauze is much more likely to start bleeding than the removal of a tube; so much so that sometimes, unfortunately, the packing must be replaced. We often see a rather free oozing follow the removal of packing from a kidney or bladder, but it usually ceases in a few moments. It is the result of the tearing of granulations entangled in the meshes of the gauze.

While the use of drainage is important in the control of bleeding, our greatest use for it is in the treatment of suppurations and infections. As a broad rule, drainage which is put in because of infection, whether it be done by tube, gauze or rubber wick, should be allowed to remain until the temperature is flat. A normal temperature may usually be taken as an indication that the wound, which at first was an absorbing surface, has changed from an absorbing surface to an excreting surface. If one waits until this occurs, no matter how long it may be, it will be safe usually to remove drainage. There is, however, an exception to this rule in that a wound which is bottle-shaped should be drained for a considerably longer time than until the temperature is flat. Drainage should be kept up until such time as there has been a considerable contraction of the deeper part of the wound. This may be roughly

estimated by the relative decrease in the amount of discharge. If this is not done, following the removal of the drainage there may be a blocking at the neck of the cavity and an accumulation of septic material in its depth levels. As a rule a secondary accumulation of this sort is not so dangerous as an infection immediately following operation. Very often an accumulation of this sort reopens itself though it is wiser not to wait for this, but to make a careful and judicious effort to find and open the pocket. One is less likely in my experience to have a septicemia following this backing up than he is to have a septicemia immediately following operation when adequate provision for drainage of an infected wound has not been made. This backing up not infrequently follows operations about the bladder base where we attempt uphill drainage from the depths of the pelvis. While we often get along well enough with this type of drainage, I believe the big pelvic veins render uphill drainage of the deep pelvis risky. It does not actually come within the scope of my title, but I wish to urge that drainage of the pelvis be made dependent in every instance where this is possible. I use more and more in cases of suppurative pericystitis and contaminated wounds deep in the pelvis, at the level of the bladder base, a simple procedure that is not so generally used as I think it deserves to be. To establish this drainage one pushes a large, curved clamp down through the muscles that form the pelvic diaphragm, directing it a little to one side of the median line of the perineum. When one feels the tip of the clamp under the skin he makes an incision over it, pushes the clamp through, grasps a tube in its jaws and pulls the tube up into the pericystitic cavity. This gives excellent drainage of the lower part of the pelvis. With this type of drainage there is hardly the possibility of backing up. The tube should be slowly shortened after the temperature has reached normal.

In the drainage of certain over-distended bladders and especially in the drainage of certain kidneys, our main object is neither the control of hemorrhage nor the drainage of infected areas, but to put the organ at rest and to allow a contraction of the drained cavity to take place. I believe that in cases where a kidney stone of any size has been removed, especially if this has been done by nephro-lithotomy, it is an extremely important prophylactic measure to allow drainage to remain for a considerable time. This allows the cavity in the kidney that contained the stone to contract as much as possible, an important point in preventing a recurrence. Any cavity filled with stagnant urine, even if this is uninfected, predisposes the patient to a reformation of his calculus. For the same reason a kidney pelvis that has been distended with a large stone should have a long period of drainage, provided this drainage is through the kidney cortex. This is to allow the distended muscle of the pelvis to contract and regain its muscular tone, since if it remains dilated or flabby, there is sure to be a recurrence of calculus. If, in such a case, drainage of the pelvis has been carried out by means of an incision in the pelvis itself, rather than through the cortex, long drainage by means of a tube is very apt to be followed by the formation of a sinus.

While the drainage of a suppurating area or cavity, provided that this does not involve a natural cavity, like the kidney pelvis, ureter, bladder or urethra, may be kept up almost indefinitely without the formation of a sinus or fistulous opening, we must be careful about the length of time we allow drainage that connects with a natural cavity to remain. The only rule I can formulate regarding this is a very vague one and that is, the thicker the wall of the organ the longer we may allow drainage to remain in place without the formation of a fistula. Thus one may drain a kidney pelvis through the cortex many times as long as through an incision in the pelvis itself without danger of the formation of a permanent fistula. So, too, in suprapubic drainage of a bladder, the thicker the abdominal wall, the longer the tube may remain without the formation of a fistula. In the same way, the deeper the perineal tissues, the less danger that drainage will be followed by a perineal fistula. In a thin perineum, drainage must be removed early. My remarks presuppose that in any instance of drainage of a cavity no obstruction exists lower down in the urin-

ary tract. Should such obstruction exist, a fistula is almost sure to follow drainage of a cavity of this sort. Should the cavity drained be tuberculous, whether kidney, ureter or bladder, there will be a great probability that a fistula will remain for a very long time, no matter how well one manages the drainage.

While many other problems come up in the post-operative care of urinary cases, lack of time forbids any attempt to discuss them. I believe, however, there are no other problems in the post-operative care of urinary cases that are as important as those we have considered; no others perhaps in which the methods commonly employed in the post-operative care of general surgical cases have to be so much modified to meet the particuar needs of urinary cases.

DISCUSSION

Dr. Edgar G. Ballenger, Atlanta, Ga.—I am sorry that time did not allow Dr. Chute to go a little more into the preliminary treatment these patients require, for a good part of the post-operative treatment should begin before operation. This is especially true in the management of the kidney function. I think the reason the urologist gets a lower mortality rate in these cases is because he devotes more time to the pre- and post-operative care of his cases. Another thing is that the urologist has to be a plumber as well as a good surgeon if he is a good urologist. I quite agree with Dr. Chute that there are few things of more importance than large quantities of water, started before the operation and continued after the operation. If one is operating in a hospital where they are unaccustomed to our methods, they may think the urologist has lost his mind when he insists upon free water immediately after operation. They think that in an abdominal operation water is bad, and unless one insists upon it, one finds that they will not give the patients enough water, coffee, tea, orangeade, etc. It is no great tragedy if the patient should vomit. It will only wash out his stomach. Then the fluid can be discontinued and after a time commenced again.

One valuable thing Dr. Chute did not mention is the use of alkalies. I make this statement after having used them for fourteen years. The patients are alkalinized before the operation and it is continued after the operation. At times you may fear infection, and in those cases you may have to substitute hexamethylenamin instead of alkalies. If there is fear regarding the kidney function we give the alkalies. If we fear infection we change to the hexamethylenamin. We are usually more afraid of the renal function.

Dr. John T. Geraghty, Baltimore, Md.—I think I can subscribe to most of the things Dr. Chute has said. I think we all appreciate the great value of water. For a number of years at the Brady Institute we have insisted that our patients get large amounts of water, and if you have seen these patients recover from uremia under this large volume of water you are sure of its value.

There is one thing that I must take exception to, and that is the essayist's explanation of the reason why water is valuable. I did not know it was possible to reduce the viscosity of the blood by taking water even in large quantities. My explanation is that it washes out the pus from the tubules of the kidneys. If you establish drainage, as you will by large quantities of water going through the kidneys, you necessarily increase and re-establish function. It is possible to increase the urea output by simply taking plenty of water. Congestion is mentioned time and time again as the cause of these conditions. In my experience they have been acute infection, of course associated with congestion, but you can get the most enormous grades of congestion with only slight reduction of renal function. In advanced cases of chronic nephritis with contracted kidney we are troubled with polyuria. Hence, even in the most advanced cases, the kidney still has the ability to take the water from the concentrated blood. This is just a matter of minor importance, for we all know that water is valuable. I was simply wondering if Dr. Chute had some explanation for his statement.

Dr. Abraham Nelken, New Orleans, La.—In cases of renal inactivity, or where we have reason to fear suppression, my preference is for glucose solution rather than salt solution. We have seen prompt renal response follow intravenous injection of a 33 per cent glucose solution. A common practice at Touro Infirmary is to use 5 per cent glucose solution instead of normal salt for hypodermoclysis. The advantage of the glucose solutions are that they contain food elements that saline does not; and, besides, there is the well-recognized renal stimulation of glucose that we are all familiar with as is exemplified in diabetes. Personally, I have been impressed somewhat by the recent literature on salt-free diet in nephritis as suggesting the advantage of other chemicals than sodium chlorid where renal failure is feared, although experience would suggest that this fear is rather more theoretical than real. I recently was in consultation in an interesting case of suppression following prolonged ether anesthesia that may be of interest if related briefly. This young woman had had a pan-hysterectomy done for double pus tubes. She passed no urine for nine days following the operation. I was asked to see her the day following the operation, for the first suspicion was that the ureters had been tied. Cystoscopy was a problem, for the patient could not be moved from her bed, and the entire anatomy of the bladder had been distorted by the operation. In addition, there was intense congestion of the mucosa, such as is to be expected following the trauma of the operation. My catheters went somewhere, but I was strongly inclined to the belief that they did not go up the ureters. Subsequent developments showed that they entered a fistulous opening in the vagina, although vaginal packs concealed this fact at the time. In

spite of all sorts of infusions and hyperdomyclisis, this patient passed no urine for nine days. Her mind was clear until the eighth day, when she showed evidence of uremia. She developed considerable anasarca. When the kidneys began to function, a great quantity of pale, clear urine was excreted and all symptoms promptly cleared. I think there can be no question that the ureters were not tied in this case, but that it was one of true suppression due to intense renal irritation from the ether. The course of this patient further exemplifies the distinction that has been often made between non-function of the kidneys and uremia. Here we have a patient going for eight days without secreting any urine and uremic symptoms developed only after a week of suppression.

Dr. George R. Livermore, Memphis, Tenn.—I promised Dr. Chute to take opposite sides with him, but he has taken the wind out of my sails by coinciding with my views. No one can doubt the efficacy of water; and with Dr. Witherspoon I believe in water "internally, externally and eternally." The more water we give these patients the better they do. Dr. Geraghty said that a congested kidney could go on and secrete urine. That is true, but if you have a damaged kidney as well as a congested one that is where we have trouble; but if water is given freely the damaged kidney can eliminate a dilute toxin where they could not eliminate a concentrated one.

In regard to drainage, I am rather inclined to disagree on draining through the parenchyma of the kidney. I think every time we cut into a kidney and leave a drain, we damage a good deal of the tissue and damage the kidney permanently. Consequently, if we can avoid drainage through the kidney substance it is better. I wash out the pelvis of the kidney after removing a stone in order to remove all calcareous particles, clumps of pus or blood clots that could be the nidus for the formation of another stone.

Dr. Wm. F. Braasch, Rochester, Minn.—I do not wish to underrate the suggestions made by Dr. Chute, for we all appreciate the value of forcing fluids in the treatment of surgical complications in the urinary tract. However, we must recognize the danger of giving too much fluid. An interne should not be allowed to inject an unlimited amount of saline or glucose solution into a patient who has lowered renal function. The administration of large quantities of liquids over a period of several days occasionally brings about cardiac collapse, and great care should be taken that the patient eliminates sufficient fluid in one way or another.

In a series of animal experiments, Rowntree has demonstrated that death may be caused by the administration of too much water into the tissues. It is evident, therefore, that too much fluid is occasionally as harmful as too little.

Dr. H. W. E. Walther, New Orleans, La.—I wish to speak on drainage in kidney operations. I made the statement last year that in my cases where the parenchyma or pelvis is opened I drained, and at that time some took issue with me. I feel that I am stepping on Dr. Braasch's toes to some extent, for at the Mayo Clinic they have popularized the primary suture of wounds, but I have not been able to get by with it. I have drained all my cases, as Dr. Chute brought out, and have drained for a long period of time with great satisfaction, and I propose to continue it. There are probably some cases in which primary suturing can be employed, but I cannot subscribe to it. I believe the pendulum is swinging the other way and we are now draining our patients more and we do not have to go in and open them up later.

Dr. Chute (closing).—As to Dr. Ballenger's remarks regarding the importance of preoperative preparation, I quite agree with him, but there are some cases where one cannot wait to prepare the patient properly. Some bladders are filled with blood; some cannot stand a catheter; others are too septic to make waiting seem wise. In these cases one must drain the bladder at once, and when you have to go ahead and open a bladder without preoperative care I believe the careful post-operative treatment can be made up largely for the lack of preoperative treatment.

I agree with the point Dr. Ballenger made about the disadvantage of working in hospitals where you are not acquainted. I think the keeping of a careful urinary chart is especially important under these conditions.

I have not used alkalies to any extent following operation. The other plan has seemed to work so well that I have not thought it necessary to use them. Perhaps I should.

Dr. Geraghty is not convinced that salt solution acts by changing the viscosity of the blood. I am not sure that this is the action of salt solution; I suggest it as a working hypothesis. However it may act, it increases urinary output, and the process of elimination and lessening the viscosity of the blood seems to me its probable method of action. I cannot quite agree with him that it acts by washing out the kidney and getting it free from pus. This washing of the kidney cannot take place until the dilution of the blood allows the glomeruli to function.

I cannot account for Dr. Nelken's patient who began to secrete urine after nine days of annuria. There must have been some temporary trouble with the renal cells. For some unknown reason this patient did not become fatally toxic before the kidney cells recovered their ability to function. I cannot explain the condition.

I am going to take Dr. Livermore's maxim home—"water externally, internally and eternally." It is a good maxim and I am deeply obliged to him for it.

I touched a little on the matter Dr. Braasch spoke of, that is, overdoing the use of water. I have seen a few such instances. I have seen acute gastro-mesenteric ileus follow the too liberal forcing of water. I have also seen what I took to be acute cardiac dilatation follow this. I think, however, it is poetic justice that it remained for a man from Minnesota to discover that an excess of water intoxicates.

I am glad that Dr. Walther agrees with me about the advantage of draining a kidney through the cortex. I believe the better drainage more than compensates for the increased risk that undoubtedly follows incision through the kidney cortex. If one has a badly diseased kidney it should be drained and drained efficiently. A big tube right down through the cortex drains it better than any other way.

THE TRAINING OF AN OBSTETRICIAN*

By Calvin R. Hannah, M.D.,
Dallas, Tex.

The present training of a medical student differs materially from that of the past. The prospective student enters the medical college with the minimal requirements of a high school education and an additional two years of college work. This period of training, when properly directed, prepares him so that he should be qualified to assume the responsibility of his medical career. A good high school training and two years of university life should develop, rather than destroy, the initiative of the individual.

The teachers in high schools and universities are public leaders who are specifically trained for the development of the youthful mind. They have good pedagogic principles, cultivating and training the student to individual activity, which creates in him an incentive and ambition in his systematic pursuit of knowledge. They labor to unfold his spirit of self-reliance, responsibility and resourcefulness.

In this early training three principles, memory, observation, and comparison, should be cultivated and thoroughly developed. An excellent and retentive memory is an invaluable asset in the medical career, for one must constantly refer to those things which have been taught. Observation is equally important in the training of the mind. So often one neglects concentration and does not detect all the minute and accurate information necessary to establish a mental picture of value. By comparison one discerns the similarity and dissimilarity of an object by calling his memory and observation into action and noting the relation between this and previous experiences. When properly developed and persistently used, these three factors lay the foundation for a medical training that will meet with success.

The curriculum varies but little in the medical colleges. The work is so planned that the first two years are spent principally with purely scientific subjects. The work is more or less abstract and the methods of teaching sometimes have a tendency to destroy the individuality of the student. The medical teacher should be of a type which has the ability to mold character, train the mind and lead the student through this critical period without stunting his imagination or destroying his initiative, but rather instilling in him resourcefulness.

The pre-clinic period is filled with both adversities and opportunities for the medical student. His career is largely made or ruined during this molding age. These teachers are scholarly men with character who silently lead and direct the student to high aspirations for service. Teachers who are qualified in their special subjects may, by their untiring service, impress the student with a burning desire not only to follow his leaders, but to forge ahead into fields of research. The student should be taught anatomy, physiology, pathology and other pre-clinic branches with the idea that he will like one a little more than the others, yet be proficient in all. The one he prefers may be emphasized during his clinical years and pursued with pleasure after he has selected his specialty. This gives him the spirit of resourcefulness, which, in his work, will react as an invaluable asset to carry him on to greater activity. It may be chemistry or pathology; but whatever it is, he should come into his clinical years with an idea of advancing some one research line which is closely allied to his selected subject.

When possible, the pre-clinic subjects should be demonstrated by clinical material. Whenever feasible, unnecessary dry facts should be culled and methods of interest and living clinics should be substituted to make the subject real. Much of the work taught in the medical schools is soon forgotten, due probably to the fact that abstract methods are employed and the truths are not cemented with clinics.

The teaching of the pre-clinical sciences should be demonstrated by that method which leaves with the student the correctness of thought and the application of those principles to human life. This method establishes in the student's mind confidence, because he not only sees in the lab-

*Chairman's Address, Section on Obstetrics, Southern Medical Association, Sixteenth Annual Meeting, Chattanooga, Tenn., Nov. 13-16, 1922.

oratory the actual pathology, but by witnessing the symptoms, he has developed a comparatively good idea of the method of diagnosis. Here, again, is exemplified the necessity of memory, observation and comparison.

Why lecture so long to students on some parts of obstetrics when, by the use of clinics, it could be demonstrated and taught more successfully and in much less time? One hour in demonstrating the signs and symptoms of pregnancy by the senses of sight and hearing is far more valuable than several hours of lecturing. The patient, in the presence of the student, touches a new chord, awakening in him an interest surpassed only by more clinics. It excels all text book work. Let the patient describe in her own manner her symptoms. Who can be more effective and impressive than the patient? She makes an ideal teacher. The language may not be so charming, or the thought so illuminating, yet spoken only as a patient can, and supplementing this with a teacher who has the art to lead his patient to describe her symptoms carefully, it will leave with the student a knowledge of the subject which he will not forget, and which has become a part of his life. He has unconsciously been influenced by that unseen force exemplified by the ideal teacher, the art of medicine. The art of medicine, that silent force of the clinical teacher, creates more energy, fashions more individuality, produces more activity and constitutes more resourcefulness in the student than his scientific ability. The clinical professor's attitude toward his patient is a force unseen, yet all-powerful in influencing the life of a medical student. It may ruin the prospective doctor or so mold him for good that his influence will be immeasurable.

In the clinical years, whenever possible, the student should be permitted actually to work with the patient. His training will otherwise be incomplete. In obstetrics it is most valuable. It is impossible to develop otherwise. Instructors who are efficient and enjoy teaching believe they have a service and a mission to perform and are more interested in molding the life and in developing well trained obstetricians than in making a commercial success. Service to mankind enhanced by qualifications of the highest type are assets absolutely essential to the character of teachers and doctors who are to train medical students and internes.

Obstetricians cannot be properly trained and educated unless our medical colleges have adequate laboratories and hospital facilities. Students advance more rapidly and develop more thoroughly in such an environment and atmosphere. The best training is given in that institution which is closely allied with a hospital that furnishes a variety of clinical material sufficient in quantity to supply the student enrollment. Dispensary and outdoor service are very essential, because it is that sort of practice the student experiences immediately upon leaving college. This department, properly supervised by physicians and teachers of worth, will develop the resourcefulness of the student and find in him latent powers which, if encouraged and nourished, will naturally inspire him to higher aspirations.

Well organized and conducted clinics influence students to accept interneship. Internes who have responsibilities, and opportunities to work independently under correct supervision, soon find in themselves an earnest desire for something high and good. This aspiration will create a desire for further preparation and stewardship for resident obstetrician, which should carry greater responsibilities, opening a new era in his preparation for more difficult and operative work. The resident obstetrician should be a competent diagnostician, adept in pathology, proficient in surgery and skillful in obstetrics.

Credit for success or failure, responsibility for diagnosis and treatment, teach principles of medicine more forcibly than lectures or recitations. The recitation system is practically useless in developing self-reliance and any initiative in the student. We should encourage him to rely upon himself and trust his own power of judgment, which will eventually train him in the feeling of security and self-confidence. Enthusiasm of youth and responsibility make a great combination for an ideal foundation in the training of an obstetrician. All through the course as student, interne and resident, he should have the advantage of these clinics, doing the

actual work before and after deliveries, both in the hospital and in the home. These cases should be reported completely in a systematic manner, corrected, graded and reviewed personally, or in class conference, so that not only the student but his associates will profit from his successes as well as his mistakes. Courage, power of responsibility, devotion to duty and valuing properly one's powers are the basic principles upon which a well-trained obstetrician thrives.

The day has long passed when students were taught more about the "Milky Way" than the "way to milk." So today we should not spend all our time teaching how mothers give birth to their babies, but rather train the student to conduct labor, to lessen pain, relieve suffering, lower morbidity and mortality, and elevate obstetrics to a standard commensurate with the service justly rendered. Unless we teach and train the student for obstetrical service of this sort, his opportunity to serve society will avail little. He must be prepared to render efficient service. This is keeping faith with the public.

No one has the right to teach who lacks the sense of service. It is the spirit of doing for others that wins. No real teacher is content to give out information, to impart knowledge. He wants bigger things, stimulating, wholesome thoughts, to urge students on from the known to the unknown, touching and kindling the spark of imagination necessary to all progress, developing self-reverence and self-mastery without which no one is properly trained.

"Without inspiration the best powers of the mind lie dormant. There is tinder in us that needs to be quickened with sparks." Life at its best is filled with a strain of monotony and we, as teachers and physicians, must be sources from which the student receives inspiration that he may rise and not fall, that he may grow and not shrink. "Give the best we have, and the best will come back to us." We should be inspired to build character and make the world a better place in which to live.

Francis B. Pearson in these few words states the powers of a teacher in the training of youth:

> "He leads them toward the summit whither life beckons. Sometimes the way is steep and the path rugged. Sometimes they slip and stumble and fall, but he is there to lift them up and speak words of cheer that give them heart and hope again. When one grows weary or faint he knows the magic words to speak. He sees the fleck of sunlight just ahead and points it out to them to restore their waning courage. When heat and thirst assail he leads them to the spring that bubbles forth its welcome. Then they renew their journey with a song and the summit seems not far away. Sometimes they look toward the delights they left behind, but soon he has them anticipating the joys at the obstacles they have passed and the hardships they have borne."

Teachers of ability and character must direct the student through his early preparation, encourage him to accept service as interne and resident, inspire him with an ambition to live a useful life, counsel him to make use of his opportunities, implore him to add his little bit to raise the standard, and teach him that it is not the man that counts, it is his work. This is training an obstetrician.

EYE, EAR, NOSE AND THROAT

SOME OBSERVATIONS ON AURAL CONDITIONS RESULTING FROM POOL AND SEA BATHING*

By H. Marshall Taylor, M.D.,
Jacksonville, Fla.

The frequent occurrence of various aural affections during the summer months has occupied a very small part in the literature of the otologist. When one reviews one's case histories, one discovers that a large percentage of ear and sinus infections during the summer time can be directly attributed to pool and sea bathing. Our recent American text books on otology give a casual and brief reference to what is termed the salt water ear, and with that the subject is usually dismissed.

In reviewing the literature, however, I learn that the sanitarians have been far more alert to the importance of this phase of medicine than the students of otology. The American Public Health Association has done a vast amount of work during the past three years, which consists of statistics and information on the sanitation of public bathing places and the improvements which have been instituted. Just what sanitation can do was forcibly impressed on me when Mr. George W. Simons, Chief Sanitary Engineer of the Florida State Board of Health, became interested in a public bathing pool in my city. In the summer of 1917 I observed an epidemic of acute external ear, middle ear, mastoid and sinus infections. All of the patients gave a history of having used a public pool in Jacksonville which had been under careless and indifferent management and which several times had been closed by the State Board of Health.

At Mr. Simons' instigation, the management of the pool was changed, and after a thorough inspection many reconstructive changes were made. An adequate supply of artesian water giving a flow of 25,000 gallons an hour through the pool was obtained. Twice a week the pool was completely emptied and its walls were scrubbed with soap and stiff brushes and a thorough hose flushing followed the scrubbing. The bathers were under strict observation and an effort was made to bar all individuals with skin or any acute infection from the privileges of the pool. A shower bath was required and patrons were requested to empty the bladder before entering the pool. Expectoration and blowing of the nose were forbidden while in the water. Only the bathers were allowed on the floors surrounding the pool. With these changes an immediate cessation of this epidemic was recorded, and since that time I have not observed infections from this particular pool. Mr. Simons, in this instance, proved that sanitary control and proper efficient supervision of bathing pools are of vital public health significance.

It should also be borne in mind, as Rovinsky has stated, that ocean water, especially near the shore that contains outlets or discharge for sewers, contains a great many disease-producing organisms. In fact, at some shores one actually bathes in diluted sewage, and while the high tide may carry it away in the ocean, the low tide maintains it there with the flotsam and jetsam of the sea.

The American Public Health Association goes on record as stating that bathing places unless under strict sanitary control are in reality potential foci of infection, especially of the sinuses and ears.

The first comprehensive investigation of swimming pool sanitation was begun by a committee appointed for that purpose by the Public Health Association at its Chicago meeting in 1918. In their report the question was dealt with in a general way and the data contained therein was arrived at by questionnaires sent to each state and city board of health of the United States. The substance of the first reports showed that there were over 1245 pools in the United States, for the most part located in or near cities. Only two states, Florida and California, had specific statutes giving the state board of health direct charge and supervision over all swim-

*Read in Section on Eye, Ear, Nose and Throat, Southern Medical Association, Sixteenth Annual Meeting, Chattanooga, Tenn., Nov. 13-16, 1922.

ming pools and requiring operators to secure state board of health permits previous to operation. In six cities out of 281 specific ordinances covering supervision of pools were in effect.

Another report of this Committee was the result of 2000 questionnaires sent to ear, nose and throat specialists, dermatologists and health officers, and in brief 627 replies showed that 70 per cent of this number believed bathing places to be an important factor in the transmission of diseases.

The last report of the Committee on Bathing Places by the Sanitary Engineering Section of the American Public Health Association in Cleveland this year stated that all over the United States bathing place sanitation and control is receiving more study and consideration than at any time since the organization of this committee in 1918. In many states sanitary engineers were trying to instigate control regulations commensurate with current knowledge and practice. Notable among the states having regulations on this subject now are Arkansas, California, Florida, Idaho, Virginia, West Virginia and Tennessee.

The following abstracts are collected from this last report which would seem to be definite evidence that this subject is of vital interest to the otologist:

"Had an epidemic of otitis media and furunculosis of external canal here last June and July from public bathing places in our neighborhood."—Niagara Falls.

"This past summer I have had a series of cases of otitis externa (furunculosis) from different camps on different lakes. The large increase in cases this year leads me to feel that the water at these bathing places must have been the source of infection."—Waterville, Me.

"Frequently frontal sinus involvement will become epidemic, all cases coming from one swimming pool. We have had three or four of these epidemics in the past three years. As many as 40 or 50 cases from Y. M. C. A. pool at one time."—Tulsa, Okla.

"Have seen frequent epidemic infections of upper air tract among bathers in a given pool."—New York City.

"During August a daily average of ten to twenty cases in which a reliable history of pool bathing infections is given, mostly rhinitis, sinusitis, otitis, etc."—Baltimore, Md.

"In the summer of 1917 an epidemic of sinus and ear infections was reported by physicians in Jacksonville. These cases were reported as coming from one pool."—Jacksonville, Fla.

Aside from the literature published as the result of the American Public Health Association's activities there are numerous writings which deal with many phases of the subject. However, it is evident that the otologists have never carried out any organized investigation. The following abstracts are made after a review of the literature and are fairly representative of the more relevant articles:

McKenzie,[18] in a letter to the *Lancet*, states that every warm summer brings cases of ear suppuration following pool bathing, and the infection is quite frequently of a highly virulent type. In the summer of 1921, he had two cases of cerebellar abscess and later sinus thrombosis, both of which followed acute middle ear infection induced by pool bathing. The infection in these cases, he believes, reaches the middle ear through the eustachian tube. It is impossible to deny that pyogenic organisms are present in the water where people habitually bathe, and the water itself is most likely the source of infection.

Schmidt states that mycotic infection occurs most frequently after swimming. He concludes by saying that spores are carried into the ear while the swimmer is diving in infected water. The two varieties most frequently found are Penicillium and Aspergillus.

Forbes, in 1912, reported an interesting study of the types of organisms found in a London swimming pool. He found organisms indicating skin contamination such as Staphylococcus pyogenes aureus and members of the proteus group; organisms present in normal saliva, such as Streptococcus salivarius, etc., and organisms indicating f e c a l contamination, chiefly B. coli communis, B. pyocaneus and Streptococcus fecalis.

After delving into the literature one is impressed with the fact that the sports of swimming and diving in the ocean or in bathing pools are fraught with many perils. Have we as public servants given the matter of the education of the bather the attention it deserves? Certainly, if this subject were studied by a group of men considering the physics, physiology, path-

ology and the modus operandi of the invasions of these infections and the result of their work were put into the hands of the laity, a definite step forward toward preventive medicine would be taken.

The American Public Health Association is doing its part, but judging from the comparatively few replies to their questionnaires sent out to the ear, nose and throat men, it might seem they have not had the assistance from them which they deserve.

Means of preventing aural infection from swimming and diving may be divided into two classes, viz.: (1) supervision of bathing places by public health authorities; (2) education of the public as to the prophylactic measures which should be used by the bather in care of the nose and ears.

Under the first heading, the American Public Health Association has made so thorough a study of bathing sanitation that we shall not dwell upon it but merely refer to the reports of this body.

Under the second heading, we can again have the cooperation of the American Public Health Association. As evidence of this, in a communication to the author Mr. Simons, who is at present on the Committee on Regulation of Bathing Places of the American Public Health Association, says:

"It would be admirable if the Ear, Nose and Throat Section of this Society would designate a committee from their membership to work jointly with the Sanitary Engineering Committee of the American Public Health Association and thereby give greater and more careful study to many phases of the problem, such as (1) nature and extent of infections over the country, (2) epidemiologic studies, (3) suggestions as to proper standards to overcome present difficulties, and (4) some plan as to the proper education of the bather as to the care of the nose and ears while swimming or diving."

It is the opinion of the writer that this whole subject is of vital interest to the otologist as well as to the sanitary engineer. Cannot we, by the hearty cooperation of one group with the other, acquire ultimate success and lessen the frequency of these acute infections which run the whole gamut of pathological conditions from the innocent circumscribed furuncle to an involvement of the mastoid with all of its intra-cranial complications?

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DISCUSSION

Dr. W. T. Patton, New Orleans, La.—I am not absolutely sure in my mind that all this trouble is from infection. For instance, in the city of New Orleans one tank was known to be rather dirty, and the greater number of patients with ear troubles were found to have gone to this dirty tank. Recently the City Board of Health in its monthly bulletin published the number of germs found in a cubic centimeter of water taken from the various tanks and swimming beaches around the city, and you could almost follow a chart of the ear conditions by the prevalence of the germs in one place and another. But there was one tank that was scrubbed every night. Its water came from artesian wells, and there were practically no germs in it. Yet we had quite a few cases from that tank. I can speak personally there, because every time I went in that tank I had infection of the sinuses and usually the ears. Is it possible that the action of the water would cause irritation of the mucous membrane of the nose and following that go into the ear?

The public health officials should supervise the bathing pools, and if possible the bathing beaches in the vicinity. Certainly we could prevent bathing in the vicinity of sewer entrances. Second, we can caution our patients and try to start a campaign of education among the people about bathing. It is surprising how few people who go in swimming know anything about the injurious effects to ear, nose and throat. I had occasion recently to talk before one of the civic clubs and mentioned a number of precautions that could be taken in bathing, and the people were astonished that there was any danger in swimming.

Dr. Taylor did not go into the prevention of ear, nose and throat conditions from these tanks. But certainly if blowing the nose violently could be stopped, if ear plugs of some kind were used, and if people with ear and nose conditions were kept out of the water, it would be a beginning. I believe the normal nose gives very little trouble, but very few have normal noses. Perhaps the water irritates the mucous membrane and it swells, and in that way the eustachian tube is stopped up and we have trouble. Just why we get external otitis in these conditions I am not able to say. Why should we not have furunculosis of the whole body? I think it is probably due to the maceration of the delicate dermis by water, which breaks the skin and opens up an avenue of infection.

But I should like to see a committee appointed to look into this matter before next year and suggest to this Section something as a prevention.

Dr. E. H. Cary, Dallas, Tex.—This is an important subject, and one which the otologists treat rather carelessly. Even if nothing else is done except to bring the matter before the health officers who come here, it will be worth while.

Dr. John H. Foster, Houston, Tex.—The part we as otologists and rhinologists can play in this is educational. Health authorities are willing and anxious to do anything they can. They want the cooperation of the ear, nose and throat men in a campaign for the prevention of these troubles. The fact that much can be done in a preventive way is illustrated particularly in our own vicinity. We have to a certain extent educated the school children on the importance of preventing middle ear infections through bathing, giving simple instructions in regard to blowing the nose, etc., and I am confident that in the last two years the incidence of middle ear infection from bathing has decreased 50 per cent.

Dr. Arthur I. Weil, New Orleans, La.—One point was indicated by Dr. Patton in his discussion that I think should be brought out especially, in educating the public. That is that the normal mucous membrane does not seem to be susceptible to irritation and infection, as it is when there is chronic or subacute inflammation. The mothers should be taught that if their children have healthy noses the likelihood of infection is less. Frequently mothers bring their children in for some inflammatory condition and say, "My child has been bathing, and I want your advice as to whether it is advisable for him to continue." If the nose can be brought into a normal physiological state, if any pathology in the nose can be removed, it is perfectly safe to allow these children to bathe. Before they are allowed to go into bathing pools, which are all infected, if they are examined and the mucous membrane brought into a healthy condition, the children are safe.

Another point is the enormous number of furuncles, and especially diffuse external otitis, that go along with bathing. The reason for this I do not know. You can take infected water and syringe the ear, and if the ear is in normal condition you will not have a furuncle. But there is something that vitiates the integrity of the skin lining the external canal, consequently we have in many individuals who bathe in these pools, unless the ear is protected with cotton or wool, a diffuse external otitis following bathing.

Dr. Geo. E. Adkins, Jackson, Miss.—I question seriously whether pool water is responsible for furunculosis any more than sterile water could be. External otitis comes from constant moisture in the external canal. If you immerse your hand in water for thirty minutes (let it be pool water or sterile water) the skin will be wrinkled and degeneration of the epithelium will be the result. This same condition takes place in the external ear canal, the dead skin peeling off as the result of moisture and plugging up the canal, which sets up the irritation.

We very frequently have cases with a furunculosis who have been persistently irrigating the external canal. Our best remedy is to stop the irrigation, and give a prescription for borated alcohol. The external ear canal is lined with skin that is not subjected to many of the external forces and responds to an irritant more readily

than does the skin covering the balance of the body.

If you put wool plugs in the ear they act as syphons and take moisture in rather than prevent it. There are two remedies. One is stay out of the water, the other is to have the ear dried immediately after coming out of the water.

With reference to middle ear conditions and sinus conditions, I should like to add that the nose and accessory sinuses are not supposed to be irrigated or to come in contact with water, owing to the fact that they are lined with ciliated epithelium instead of pavement, which is supposed to stand water.

Dr. Benjamin F. Hodsdon, Miami, Fla.—Otitis media due to pool bathing is very frequent around Miami, Fla. I had a case of mastoiditis which I operated upon that was traced to pool bathing. Pool bathing when accompanied by diving is more serious than otherwise.

A young woman called at my office last week with earache. She was an expert swimmer. She had been bathing in a city pool. The consequence was otitis media.

Usually when a person has been in the water he will put a finger in the ear and shake it, thereby forcing the water against the ear drum, causing an abrasion and usually infection.

Dr. Joseph B. Farrior, Tampa, Fla.—The last word as concerns bathing pools has been said by Dr. Taylor. If we have a committee working to establish rules and regulations it will prevent this trouble in a small degree, if not a larger, and it will be worth all this time in discussion.

I am not prepared to say what produces this condition. My hope is that I shall be given some method of taking care of external ear infections. We find patients suffering from this condition more often than any other condition of the eye, ear, nose or throat. A man can argue many points as to the cause of internal conditions of the sinuses, antrum, etc., but very frequently they come from swimming pools.

I should like to have a treatment for external auditory canal infection.

Dr. C. L. Kibler, Columbia, S. C.—Within the last few years around Columbia there have been established a good many public bathing places by damming up branches, creeks, etc., which cannot be treated in a sanitary way like the Y. M. C. A. pools. As a result of these bathing resorts, I can conservatively state that the cases of furunculosis and acute otitis media have increased more than 100 per cent. A very great percentage of the cases are adults, traceable directly to bathing in the ponds. It is no longer a disease of childhood following the exanthemata. It is now no respecter of persons, as all ages frequent these bathing places.

The question is one of education and publicity. We as otologists know it. The public health service knows it, and has been combating it. And we want our patients and the laymen in general to realize the seriousness of the situation.

Dr. P. McG. Farrington, Memphis, Tenn.—I think Dr. Adkins is right in his remarks about the external otitis. We had some experience with a new pool this winter which was lined with tile, where a chemical filtration plant was in use. The water was repeatedly analyzed by the Board of Health and reported pure, but we still had a number of these cases. We induced the owners of the pool to leave out the chemical, believing it produced the irritation in the skin lining the canal. It was my belief that the chemically treated water, after drying in the canal, became concentrated enough to produce excoriation of the skin and that the infection was from the air and not from the water. The committee who had charge of the pool left off the chemical filtration, washed the pool twice a week, and we had a marked decrease in the number of cases reporting for treatment. In addition I suggested that every one, after coming out of the pool, should instill a saturated solution of boric acid into the ears and that they use plugs of no kind in the external canals while in the pool.

Dr. Taylor (closing).—The importance of the education of those who enjoy the sports of swimming and diving in preventing these infections cannot be emphasized too much.

A simple procedure, that is the protection of the ear from water by the use of cotton saturated in liquid petrolatum and the wearing of a tight-fitting bathing cap, will prevent such external ear affections as furunculosis and mycotic infections which are frequently secondary to pool bathing.

There is another phase of this subject which has not been developed and which is pertinent. That is the length of time one can remain in the water without reducing the body temperature and in this way lowering the resistance. Today children will spend an entire morning in an indoor swimming pool, or else play around it in their wet bathing suits, during which time they are not exposed to the sunshine. This chilling of the body lowers their resistance and makes them more susceptible to pathogenic organisms which may be present in the pool, or those which may be already harbored in the upper air passages. This is a different problem from that in the days of James Whitcomb Riley's "Old Swimmin' Hole," when we were clad in Nature's garb, and the body surfaces were kept warm and almost immediately dried in the sunshine.

RETROBULBAR NEURITIS OF MALARIAL ORIGIN*

By F. Phinizy Calhoun, M.D.,
Atlanta, Ga.

Ocular manifestations of constitutional diseases are common. Malaria, once a prevalent and widespread disease, but now less frequent and localized, has contributed its share to ocular complications. In 1879, Poncet mentioned that ocular lesions might be found in 10 per cent of all cases of true malaria. Such a high percentage could hardly be true today, when modern sanitation has robbed ophthalmology of many wonderful cases.

Of the various ocular complications which are attributed to malaria, optic neuritis is prominent, which classification has received the sanction of the Royal College of Surgeons.

A retrobulbar neuritis, or a malarial amblyopia, is less common, and I find recorded in the literature of the past twenty years only those cases mentioned by Fergus, Lauber, Agricola, Boutlard and Marquez.

The following cases are rather typical and all have been seen within one year:

Case I.—D. V. T., age 40, a salesman residing in the lower section of the State, complained of defective vision of two months' duration. His family history was negative for eye disorders. He was not addicted to the use of drugs, alcohol or tobacco. He had "indigestion" and had been told that he had malaria, but he was positive that he had not taken quinin.

The eye examination was: Vision right and left 20/70 unimproved; external appearance, normal; pupils, active; media, clear; and slight blurring of the nasal halves of the discs, while the temporal sides showed pigment crescents. In each macular region there were fine granular changes. The arteries were normal, but the veins were distinctly distended.

The visual fields at the first examination (2-11-20) showed an irregular contraction for form, and a rather marked contraction for colors. There was a central relative scotoma for colors in the right, and an absolute central scotoma for colors in the left eye. The right blind spot was slightly enlarged downward.

The nose and teeth were negative for infections by inspection and x-ray. The tonsils were imbedded and slightly infected. The urine was normal. Blood Wassermanns were negative. There were present many malarial parasites of the tertian type.

The patient's general appearance was bad. He had a waxy complexion commonly seen in the cachexia of this disease. A diagnosis of chronic retrobulbar neuritis of malarial origin was made, and five-grain capsules of the bisulphate of quinin were ordered four times a day.

Two months later vision had returned to 20/30 in each eye. The fields were full and there were no scotoma, and the general appearance and well-being of the man was better. Quinin was discontinued.

Case II.—J. G., age 19, a college student, living in Louisiana, complained of pain and blurred vision in the left eye of three days' duration. He gave a history of a similar attack in 1918, and according to the statement of his oculist the vision then was 20/15 in the right eye, left 5/180, and no definite conclusion was then reached as to the cause of this amblyopia. Several infected teeth were at that time removed, and finally the sight of the left eye improved under "tonic treatment." There was a history of a "black eye" in 1919.

Vision right 20/20 was corrected, left peripheral only. The right eye was normal. The left upper lid was slightly edematous and drooping. The external appearance of the eye was normal and the media clear. There was a marked pigment crescent at the temporal side of the dics, larger than the one in the right eye. The retinal vessels were normal.

The fields of the right eye were normal for form and color. The left field contained a small area above the fixation point which could detect large objects.

The nose, sinuses, and teeth were normal for infections. The tonsils had been cleanly removed. The sella turcica was of normal size and clear cut. The blood Wassermann was negative. The blood contained malarial parasites of the tertian type.

For a diagnosis two conditions were especially considered: first some retrobulbar nerve change resulting from the blow which this eye received some months previously. The large pigment temporal crescent was suggestive of an old hemorrhage into the optic sheath which according to Lagrange is strongly significant. Secondly, a retrobulbar neuritis of malarial origin was considered principally on account of the parasites found in the blood.

The latter opinion being the most likely, five grains of quinin bisulphate were ordered four times a day. One month later the sight had improved to 20/100 in the defective eye. At intervals he complained of periodic blurring in the right eye, but I could never demonstrate a scotoma or other changes. This could hardly have been due to the quinin since the left eye was steadily improving. Seven weeks after the initial examination, vision was 20/30. The fields had greatly improved, but there was an absolute central scotoma for colors. A subsequent examination showed normal vision, with no scotoma.

*Read in Section on Eye, Ear, Nose and Throat, Southern Medical Association, Sixteenth Annual Meeting, Chattanooga, Tenn., Nov. 13-16, 1922.

The next case, while not typical of retrobulbar neuritis, exhibited certain symptoms which, I believe, may be so classified.

Case III.—H. D. S. complained of acute pain in the right eye of six weeks duration, and in the

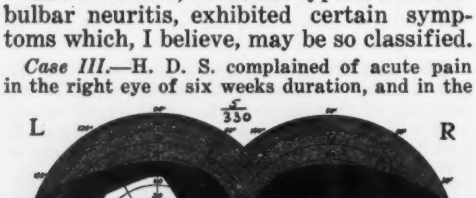

Fig. 1.—Case 1 contains a central relative scotoma in the right eye, and an absolute central scotoma in the left eye.

left eye of only one day. He described the pain as coming on at night and as deep seated in character, especially in motion of the eyes. There was a slight degree of photophobia. All of these symptoms were relieved by the instillation of a

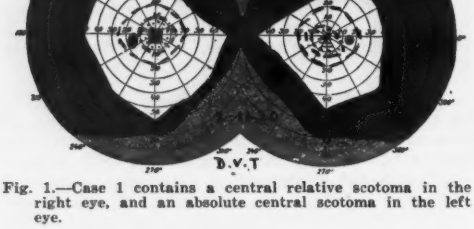

Fig. 2.—Case 1 after two months.

weak solution of cocain and homatropin, which he had been using at home for several days.

Vision was 20/20 in each eye. The external and internal structure were normal. Fields

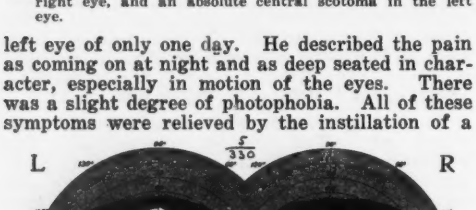

Fig. 3.—Illustrating Case 2, which shows only a small area of vision in the left eye.

were greatly contracted, and there was a relative blindness for red in the right eye, and an absolute blindness for red in the left eye.

Focal infections were negative in the teeth, tonsils, sinuses. The urine and blood Wassermanns were likewise normal, but the blood showed tertian malaria.

Here also all of the symptoms could readily be attributed to a malarial infection, and appropriate doses of quinin were ordered. In one week he was entirely relieved with restoration of the color defect. The acute ocular pain

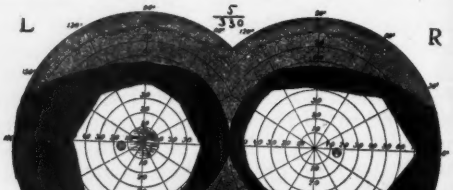

Fig. 4.—Case 2, after two months. The left eye contains a central relative scotoma which sequentially disappeared.

which was relieved by the instillation of cocain drops, was probably a toxic neuralgia affecting the corneal nerve terminals.

Of the cases reviewed Agricola's is the most typical. Following an attack of malaria in which the patient is supposed to have been cured, retrobulbar pain and defective vision developed simultaneously. The fundus was negative, and there were central absolute scotomata. Recovery was complete in two weeks.

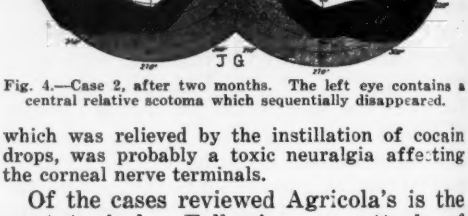

Fig. 5.—Illustrating Case 3, which exhibited marked peripheral contraction for form and colors.

Without doubt many of the nerve changes charged to malaria have really been due to massive doses of quinin, and careful questioning should be done in every case to elicit this information since most cases of malaria have been previously given quinin. A point of differentiation is the great congestion of the discs and distended retinal veins often found in malaria, as

compared to the pallor of the discs and contracted vessels seen in quinin poisoning.

The amblyopia, occasionally seen in malaria without visible fundus or field changes, and described by the patient as blurred or foggy vision, is probably a forerunner of the more definite clinical changes of a toxic retrobulbar neuritis with its accompanying scotoma. This was evident in Case 2, and Marquez mentions similar cases. De Schweinitz ascribes this amblyopia to a special action of the malarial parasite upon the nerve and retina.

Field changes, such as color scotoma and contractures for form and colors, are to be expected in malaria neuritis as were typically represented in all three cases, and substantiated by Fergus and Poncet. Likewise there is frequently a detention of the retinal veins, very suggestive in Case 1.

The fine granular macular changes described in Case 1, which I am not sure were pathological, might have accounted for the central field changes, but the other evidence was more conclusive that the nerve itself was involved. We can readily apply Poncet's explanation of these chorioretinal changes, which he states are quite frequent and due to "an embola of melancholic leucocytes in the capillaries," as also being the cause of these nerve affections.

Since the question of quinin amblyopia has been injected into this paper, it may not be amiss to mention briefly the therapeutic administration of quinin. No less an authority than Colonel R. H. Elliott, from his investigation and rich personal experience, gives valuable suggestions in a recent paper.

He emphasizes the importance of "first the salt of quinin employed; second, the vehicle in which the drug is given; third, the method of administration; fourth, the total amount of drug retained in the system; fifth, the individual idiosyncrasy of the patient; and sixth, the age, sex and weight of the patient."

It is most commonly agreed that the taking by mouth of not more than 45 grains in 24 hours of the sulphate or bisulphate of quinin is the safest way of administering the two most effective alkaloids. But after all it is the idiosyncracy of the patient which tells. The two most notable examples of which I know, are Elliott's report of a man, age 60, who suffered from amblyopia with contracted fields if he took 2 grains of quinin; and Finnoff's case of toxic symptoms of quinin poisoning following the instillation of a 1 per cent solution of ethylhydrocuperein into the conjunctival sac.

In attributing these cases of amblyopia to a retrobulbar neuritis of malarial origin, I was impressed by a statement made by Osler in his "Text Book." He said:

"The malarial poison is supposed to influence many affections in a remarkable way. The more closely such cases are investigated the less definite is the connection with malaria."

Taking heed of the warning of that great clinician every effort was made to find a cause in the study of these cases. A focus was established, measures adopted to eradicate it, and the eye condition improved. Such evidence appears conclusive.

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DISCUSSION

Dr. J. M. Hogshead, Chattanooga, Tenn.—About four years ago a child three years old from Dallas, Tex., was referred to me. The mother had lost two younger children and was anxious about this one. The child looked like a syphilitic, and we put her through the Wassermann test. The laboratory report showed that she was suffering from malaria. The fundus was much congested and the discs swollen, but of course at that age I was not able to get the measurement of its vision. I put her on quinin treatment and alternated it with sodium cacodylate, and the patient in three months was able to play like other children.

Another case was referred to me from Kingston. He had been in a lumber camp in Florida. The vision in his left eye was failing. He had been treated by several men for syphilis. Dr. Smith and I found he had malaria. At his suggestion I gave the patient sodium cacodylate, and with it some pituitrin. The reason I suggested pituitrin is that the optic nerve is partly within the eyeball and directly behind a part of the optic commissure. We obtained very gratifying results in this case.

I saw another case of a woman whose vision was 20/100. The laboratory test showed malaria, and her vision now is 20/30. She has a little connective tissue spot on the temporal side which will always be there.

Dr. E. W. Carpenter, Greenville, S. C.—The only case of ocular paralysis from malaria I have

ever observed was in a young girl of sixteen, apparently in perfect health, with a negative physical and laboratory examination, except that malaria plasmodia of the tertian type were found in the blood. I did not at that time attempt to prove whether the circular or radial fibres were involved. Apparently she had complete paralysis of accommodation. The vision was perfect in both eyes, the refraction practically normal, and with a plus three she could read the finest type at thirteen inches. In going into the case at first I was nonplussed, and procured my clue from a careful history-taking, which revealed the fact that two or three weeks previously the girl had had an irregular temperature. She lived in a country where malaria is practically unknown. Under quinin her accommodation was completely restored and for several years she had no recurrence.

Dr. G. C. Savage, Nashville, Tenn.—Quinin amblyopia is a very different thing from retro-bulbar neuritis. Quinin amblyopia is always double-sided. It always involves the field, but not the direct vision. Retro-bulbar neuritis involves only one eye as a rule. It is a very important condition, and fortunately rather rare. It is difficult to diagnose. During the years I have been observing, I have followed out this line of thinking: A patient comes in with very low vision in one eye; the other eye good. The fundus shows absolutely nothing wrong unless it be a slight paleness of the nerve head. The condition certainly is not such as would be found behind the commissure; for, if the disease producing the trouble were behind the commissure, both eyes would be involved. Naturally any collection of the inflammatory material within the sheath of the nerve manifests itself in pressure on the blood vessels, so if pressure does not show any change in the fundus of the eye, I say it is a case of retro-bulbar neuritis.

What is the cause? I think the inflammatory process is infiltration of the fatty connective tissue at or near the apex of the orbit. This effusion may be of a serious character, enough to make pressure on the sheath of the nerve, but the pressure being behind the entrance of the arteries does not manifest itself in the fundus of the eye.

I saw a case in consultation of a young married woman who was totally blind in one eye. The Doctor had given an unfavorable prognosis. I looked into her eye and found precisely what I have just told you. Because of this, I was inclined to think it was retro-bulbar neuritis and that she would recover. The fact is she did recover, and only last week her father told me her vision had remained perfectly good.

I also saw, recently, another case, a young lady who was practically blind in one eye without any impairment of vision in the other eye. The fundus showed no change except that the nerve head was a little pale. A diagnosis was made of retro-bulbar neuritis. She, too, has had a good recovery. I saw her a few weeks ago, and this past week her vision was reported to be 15/20. That woman improved much more rapidly after she began to spray her nose thoroughly with an oily spraying preparation. This leads me to believe that the condition of the posterior ethmoidal cells may cause an effusion into the connective tissue of the orbit toward its apex, and that may account for the blindness in retro-bulbar neuritis.

Dr. Calhoun (closing).—The cases just mentioned by Dr. Savage were certainly not of malarial origin, but were very likely a retro-bulbar neuritis or sinus disease. It is also my impression and experience that central field changes can occur as the result of quinin intoxication, and the only point of difference between a retro-bulbar neuritis of quinin or malarial origin, is the difference in the appearance of the disc and retinal vessels mentioned in the paper. It is important to have complete laboratory aid in the diagnosis of malaria; for artefacts and pigment changes in the blood will often deceive experienced laboratory technicians.

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SOME UNSOLVED PROBLEMS OF SYPHILIS

Regardless of our far-reaching knowledge of syphilis, there are still some unsolved problems, among which are the question of type or strain of the Treponema pallidum, the exact nature of the Wassermann reaction, the possibility of paternal transmission, and the reliability of our tests to determine a cure.

There are probably numerous types of the Treponema pallidum just as there are numerous types of micro-organisms, such as the pneumococcus, the streptococcus, etc. It has been demonstrated that more than one type of the treponema exists, but it has not been proven that the various types possess any selective characteristics.

Conjugal syphilis would seem to demonstrate the specificity of type and there are cases reported in which both husband and wife have developed lesions of the nervous system. However, there are numerous instances where this has not occurred. For example, there is an instance where lesions of the skin and bone predominated in the husband and nervous lesions in the wife. Another example is where the wife died with a heart lesion; the father developed a locomotor ataxia; and a son showed lesions mostly of the bony structures.

The exact nature of the Wassermann test is another unsolved problem. It was at first thought that this reaction was specific in that the antigen must contain the Treponema pallidum. However, this was found to be an error, for antigens known as artificial antigens soon came into general use, and because of their reliability, superseded the specific antigen. It was then discovered that practically all good antigens contained lipoids and it was thought that the changed relationship existing between lipoids and globulins produced the reaction. Cholesterin was later added to the antigen and it became more sensitive. The reaction is, therefore, not a true antigen-antibody reaction, for the injection of the antigen used into an organism would hardly produce a specific antibody.

Congenital syphilis and Colles' law or Baumes' law are still debated as is also Profeta's law; but the Wassermann reaction would seem to abrogate both. Paternal transmission is another unsettled point and it probably will be for some time to come, for the reason that study along this line requires years of observation and collection of data.

The most important of the unsolved problems relates to cure. Unfortunately, there are no standard requirements that a patient must meet before he or she is pronounced cured. Some physicians dismiss a patient as well without an examination of the spinal fluid, even though it has been shown that the fluid is infected, or the nervous system attacked, early in the disease. Great care should be exercised to ascertain definitely if any infection remains, not only by an examination of the blood but also by an examination of the

spinal fluid. Reliance should not be placed upon one Wassermann reaction alone, but the tests should be repeated over a long period of time.

COUE IN AMERICA

Many people unacquainted with the details of Mr. Coue's career in the United States have yet an unshakable conviction that he will carry home a supply of American money which does not need the difference between French and American exchange to give it great bulk, all of which goes to show the power of a slogan in advertising. Something of Mr. Coue's principle of healing is known now to nearly every unliterary and unscientific person. It is his slogan, not his results, which has made him known.

Coue has, as it were, filched the fundamental principle of Christian Science and the fundamental concept of the late psychologists. From the former he took the idea that faith can heal bodily ills; from the psychoanalysts the idea that there is a subconscious self which powerfully influences or controls the conscious. His actual method of healing borrows somewhat from the hypnotists.

Coue[1] says:

"I know that one generally passes for mad in the eyes of the world if one dares to put forward ideas which it is not accustomed to hear. Well, at the risk of being thought so, I say that if certain people are ill mentally and physically, it is that they *imagine* themselves to be ill mentally or physically."

This statement is not sufficient to make us consider him mad; for the Christian Scientists also say that we only think or imagine we are ill, and the Christian Scientists have a fairly large following.

Coue[1] further states:

"In order to understand properly the phenomena of suggestion . . . it is necessary to know that two absolutely distinct selves exist within us. Both are intelligent, but while one is conscious the other is unconscious. . . . The unconscious is responsible for the functioning of all our organs by the intermediary of the brain. . . . If it believes that a certain organ functions well or ill or that we feel such and such an impression, the organ in question does indeed function well or ill, or we do feel that impression.

"Not only does the unconscious self preside over the functions of our organism, but also over *all our actions whatever they are.*

. . . . . .

"The unconscious self is the grand director of all our functions. Make this believed . . . that a certain organ which does not function well must perform its function, and instantly the order is transmitted. The organ obeys with docility, and either at once or little by little performs its functions in a normal manner. This explains simply and clearly how by means of suggestion one can stop hemorrhages, cure constipation, cause fibrous tumors to disappear, cure paralysis, tubercular lesions, varicose ulcers, etc."

This is his hypothesis, that the conscious mind controls the body by means of the subconscious mind. Freud (by comparing Coue with whom we do the latter considerable honor) offered the hypothesis that the subconscious mind controlled the conscious, the bodily instincts being at the root of all. But Freud offers more proof for his hypothesis than does Coue.

Dr. Freud[2] laments that medical students are accustomed to steer away from psychology as something which asserts as facts things not demonstrable anatomically or clinically. They are prone to neglect psychology for this reason. He says:

". . . I am afraid your penalty will be this, that you will be forced to relinquish a portion of the therapeutic influence to which you aspire to those lay physicians, Nature-cure fakers and mystics whom you despise."

He thinks that the study of psychology, particularly of the unconscious impulses, is of value in medical diagnosis.

Physicians in general have too long neglected the mental symptoms of their patients, and the penalty they pay is that these mental conditions are exploited by persons ignorant of experimental science.

1. Coue, Emile: "Self-Mastery Through Conscious Autosuggestion." New York: American Library Service, 1922.

2. Freud, Sigmund: "A General Introduction to Psychoanalysis." New York: Boni & Liveright, 1920.

It is not intended to suggest that Coue intentionally plagiarized from the psychoanalysts or the Christian Scientists. He is perhaps one of the Nature-cure fakers against whom Freud warns us.

He may be sincere in his faith in his own method, but his reports of cures demonstrate nothing except Coue's own ignorance. Persons are quoted as cured of tumors, tuberculosis, nephritis, etc., but no convincing evidence is advanced in the first place that the diseases or lesions were actually present—the obvious reason for the omission being that Coue himself knows little or nothing of the symptoms, signs or pathology of disease.

Undoubtedly in cases where the individual only thinks himself ill, Coue's method will be of great benefit, since the mind acts upon the body and vice versa. Excitement can cause indigestion, indigestion pessimism, etc.; and if one tells certain persons that they are looking better, they feel three times as strong.

The suggestion that the subconscious is the link connecting the conscious and the bodily functions might be used as an hypothesis in therapeusis. Coue has certainly not proved it. The diagnosis of any illness which causes symptoms painful or objectionable to the patient should be made by a man who is competent to recognize conditions needing medical or surgical attention, not by a pharmacist such as Coue, or by the laity, or by the patient himself.

HOME FOR INCAPACITATED PHYSICIANS

Certain fraternal organizations and some of the crafts have established from time to time homes for the care of their aged, or otherwise incapacitated, members. That these homes are filling a need is evidenced by the large number of their inmates.

The idea that some similar institution be founded for Southern physicians was suggested by Dr. Paul J. Gelpi, of New Orleans, President of the Louisiana State Medical Association, in his inaugural address in April, 1922. Later, he presented the plan to the Southern Medical Association at the Chattanooga meeting in November, 1922, where the idea received further endorsement.

No more pathetic sight is met with than that of a superannuated, helpless, penniless physician, tottering on the down grade of life after having spent his active years in hard work but with nothing available for his support during the autumn of life. True, and fortunately so, there are not many of these; but most communities can show at least one or two, so that the total number in a state or in the whole South would doubtless be surprisingly large.

Opponents of such an institution argue that old people do not long survive transplantation to new environments, that they yearn for old acquaintances and familiar scenes and thus pine away and die. Often an old man has a wife whom he does not wish to leave. It is further maintained that such an unfortunate may possess a relative or friend who could care for him if only a small sum of money were available, frequently less than the pro rata maintenance cost at an institution.

Dr. Gelpi does not insist upon institutionalizing all who are in need of help. However, he thinks some kind of provision should be made for them. The desirability of a separate building, its location, the means of raising the funds, those eligible for help, and the question of dues which would later grant the privileges of the home, are details yet to be worked out. The report of the special committee of the House of Delegates of the Louisiana State Medical Association next April may deal

with some of these points. At least it will be awaited with interest.

Meanwhile, valuable data can be compiled if each reader of the JOURNAL will write giving the number of needy physicians living in his community, anywhere within our territory. In order that there may be no duplications, it is suggested that this information include as a minimum: the individual's initials, age, town, and the general nature of the incapacity.

The JOURNAL does not know how practical this somewhat socialistic project may prove to be, but at least it is important enough to justify our careful consideration.

The development of this plan in Louisiana will be followed by the rest of the South with interest.

Book Reviews

Brain Abscess. Its Surgical Pathology and Operative Technic. By Wells P. Eagleton, M.D., Newark, N. J., Lt.-Colonel, M.R.C.; President, American Otological Society, 1921; Medical Director, Newark Eye and Ear Infirmary, Newark, N. J.; Chief of the Division of Head Surgery, Newark City Hospital; Attending Craniologist, Newark Presbyterian Hospital; Consulting Craniologist, St. Barnabas Hospital and St. Michael's Hospital, Newark, N. J., and Muhlenberg Hospital, Plainfield, N. J., and Mountainside Hospital, Montclair, N. J.; Chief of the Section of Surgery of Head, Base Hospital, Camp Dix, N. J., 1917-1918. New York: The Macmillan Company, 1922.

In this monograph the writer has attempted to correlate the surgical treatment of the different pathological lesions of brain abscess, for he believes that, although pathology and treatment usually are dealt with in separate chapters, they are in reality one and should be so considered. Certain it is that if one is to meet with even a moderate degree of success in the treatment of brain abscess, the surgical manipulation in each individual case must be adapted to the exact pathological condition present.

How far he has succeeded, each individual reader must judge for himself. There can be no question, however, of the painstaking thoroughness of this effort.

In the chapter on diagnosis the writer voices many opinions which must be regarded as purely speculative, much of which doubtless will be demonstrated to be fallacious as our physico-pathological understanding of the clinical manifestations of suppurative cerebral lesions increases.

Nor does he apologize for the minutely detailed technic. He has emphasized the technic, because he has learned from personal experience to regard it as equally important with diagnosis. While the opinions expressed are his own, he has endeavored, whenever possible, to substantiate them by reference to recorded opinions and observations. When an unsubstantiated opinion is cited, the authority for it is given in the text.

It is by far the best and most comprehensive monograph dealing with intracranial suppuration that the year has brought forth.

Surgically considered, intracerebral abscess stands in a class by itself, the problems presented in its surgical treatment differing from those of suppuration in other parts of the body and are distinct from those encountered in the treatment of non-suppurative lesions of the brain.

Minor Surgery, Including Bandaging. By Henry R. Wharton, M. D., Consulting Surgeon to the Presbyterian Hospital, Children's Hospital, St. Christopher's Hospital, The Bryn Mawr Hospital and Girard College; Fellow of the American Surgical Association. Ninth Edition. Thoroughly Revised with 450 illustrations and 647 pages. Philadelphia and New York: Lea & Febiger, 1922. Cloth, $4.00.

This popular volume is undergoing its ninth edition. It contains no descriptions of major operative procedures, but has the simpler methods of blood transfusion and the Carrel-Dakin method of wound treatment among other minor procedures. Profuse illustrations of the generally employed methods of bandaging make it a clear and very useful book.

A Manual of Gynecology. By John Osborne Polak, M.Sc., M.D., F.A.C.S., Professor of Obstetrics and Gynecology, Long Island College Hospital; Professor of Obstetrics, Dartmouth Medical School; Gynecologist, Jewish Hospital; Consulting Gynecologist, Bushwick, Coney Island, Deaconess', and Williamsburg Hospitals, Brooklyn, and the People's Hospital, New York; Fellow American Gynecological Society, New York Academy of Medicine, etc. Second edition, thoroughly revised. Illustrated with 139 engravings and 10 colored plates, and containing 396 pages. Philadelphia and New York: Lea & Febiger, 1922. Cloth, $4.50.

The chapters on menstruation, ectopic pregnancy, pelvic inflammation, and sterility have been rewritten to conform to the advances of the last ten years in gynecology. The illustrations in the book are full and valuable.

Manual of Diseases of the Nose and Throat. By Cornelius G. Coakley, A.M., M.D., F.A.C.S., Professor of Laryngology and Otology, College of Physicians and Surgeons, Columbia University; Attending Surgeon, Bellevue Hospital, in charge Laryngological and Otological service; Consulting Laryngologist and Otologist, Presbyterian Hospital; Fellow of the New York Academy of Medicine; Fellow of the American Laryngological Association. Sixth Edition, Revised and Enlarged. New York and Philadelphia: Lea & Febiger, 1922. Cloth, $4.25.

The sixth edition of Coakley's Manual with the additional illustrations and the new chapter on diseases of the nasal vestibule, the special articles on sinusitis in children, Vincent's angina, parapharyngeal abscess and the direct examination of the upper air and food passages, will prove a valuable reference book for students and general practitioners.

Ophthalmoscopy, Retinoscopy and Refraction. By W. A. Fisher, M.D., F.A.C.S., Chicago, Ill., Professor of Ophthalmology, Chicago Eye, Ear, Nose and Throat College; Late Professor of Clinical Ophthalmology, University of Illinois; Late Surgeon, Illinois Charitable Eye and Ear Infirmary; Late President, Chicago Ophthalmological Society. With 248 illustrations, including 48 colored plates. Published by W. A. Fisher, 31 North State street, Chicago, Ill.

The carefully compiled information in tabloid form renders this a valuable little compend for the general practitioner who dabbles in refraction; but presents nothing new to the qualified ophthalmologist.

Bronchoscopy and Esophagoscopy. A manual of Peroral Endoscopy and Laryngeal Surgery, by Chevalier Jackson, M.D., F.A.C.S., Professor of Laryngology, Jefferson Medical College, Philadelphia; Professor of Bronchoscopy and Esophagoscopy, Graduate School of Medicine, University of Pennsylvania; Member of the American Laryngological Association; Member of the Laryngological, Rhinological and Otological Society; Member of the American Academy of Ophthalmology and Oto-Laryngology; Member of the American Bronchoscopic Society; Member of the American Philosophical Society, etc. With 114 illustrations and 4 colored plates. Philadelphia and London: W. B. Saunders Co., 1922. Cloth, $5.50.

This book is based upon an abstract of the author's larger work, "Peroral Endoscopy and Laryngeal Surgery." The abstract was prepared under the author's direction by a reader, in order to get a reader's point of view on the presentation of the subject in the earlier book. With this abstract as a starting point, Dr. Jackson has endeavored to accomplish the difficult task of presenting by written word the various purely manual endoscopic procedures. The large number of corrections and revisions found necessary has confirmed the wisdom of the plan of getting the reader's point of view; and these revisions, together with numerous additions, have brought the treatment of the subject up to date so far as is possible within the limits of a working manual.

An Outline of the Medical Service of the Theatre of Operations. By M. A. W. Shockley, Lieutenant-Colonel, Medical Corps, U. S. Army. 8 diagrams and 230 pages. Philadelphia: P. Blakiston's Son & Co., 1922.

This book has been rewritten from lectures and conferences given at the General Service School with the idea that it might be of service to both line and medical officers. Although technical in character it is clearly and pleasingly written and should be of value to the Reserve and National Guard officer as well as to the officers of the Permanent Establishment of the U. S. Army.

Diseases of the Heart. A Handbook for Students and Practitioners. By I. Harris, M. D., L.R.C.P. (Ed.); Honorary Physician-in-Charge, Cardiographic Department, Liverpool Northern Hospital. 50 text figures. 196 pages. New York: William Wood & Co., 1922. Cloth, $3.00.

This book is written very uncompromisingly. The author at times stresses his views when they are not in accord with the accepted teachings of modern cardiology. Furthermore, he does not give the data from which he draws his deductions. Despite the fact that in places there is sound teaching, this can be found in so many other manuals, that one is at a loss to know why this book was written.

Lessons in Pathological Histology. By Gustave Roussy, Professeur Agrege, Chef des Travaux Pratiques d'Anatomie Pathologique a la Faculte de Paris, and Ivan Bertrand, Chef de Laboratorie Delegue a la Clinique des Maladies Nerveuses de la Faculte de Paris. Translated from the Second French Edition by Joseph McFarland, Professor of Pathology and Bacteriology in the Medical Department of the University of Pennsylvania. Philadelphia: Lea & Febiger, 1922.

This little work is novel in plan and execution. In a series of 124 plates it presents excellent drawings made from actual sections of pathological tissues. The text on the page opposite each drawing directs attention to significant features of the lesion, emphasizes the deductions to be drawn from them and lays down the final diagnosis. Thus far, the book is interesting and entertaining. But, unfortunately, the execution of the plan is not so happy as its conception. The lesions selected for illustration are not well chosen and there is little or no orderliness in their arrangement. More disturbing than this is the fact that, at least for the American student, the terminology is different from that of his usual texts. For example, the term "epithelioma" is applied indiscriminately to carcinomata of squamous cell and of glandular type. The treatment of the white blood cells is inadequate and confusing. There are occasional inaccuracies or misprints, such as that giving the diameter of the erythrocytes as 7 to 8 mm. The statement that in fatty liver "the hepatic tissue is gradually replaced by adipose tissue not unlike that under the skin" is, to say the least, misleading. Nor will the American student obtain any very clear idea from the observation that in a "seminoma" some tumor cells "recall the appearance of lymphocytes and seem to be of inflammatory nature and more or less conjunctivo-vascular."

Despite such shortcomings, the book constitutes an interesting attempt to transfer into the field of pathologic histology something of the idea represented by the case-history type of book that has found such favor in the clinical branches.

The Art of Anaesthesia. By Paluel J. Flagg, M.D., Lecturer in Anaesthesia, College of Physicians and Surgeons, New York; Consulting Anaesthetist, Bellevue Hospital, Jamaica Hospital, St. Joseph's Hospital, Yonkers; Visiting Anaesthetist, St. Vincent's Hospital, New York; Formerly Lecturer and Demonstrator in Anaesthesia, Rockefeller Institute War Demonstration Hospital; Visiting Anaesthetist to Roosevelt Hospital, the Woman's Hospital and Fordham Hospital, New York City. Third Edition Revised, with 136 illustrations and 371 pages. Philadelphia and London: J. B. Lippincott Co., 1922. Cloth, $4.50.

The art of anesthesia has become very complicated in the brief time since the discovery of ether anesthesia by Crawford Long a little over a half century ago. The rapidly improving methods call for frequent revisions of extant works upon the subject, as is shown by the shortness of the periods which have elapsed between the three editions of this book. Its author feels now that the wide use of nitrous oxid-oxygen anesthesia, still very popular in many places, has passed its peak, and that for good reasons there is a distinct reversion to ether.

Recent instruments for accurate determination of the anesthetized patient's condition are discussed. The work is up-to-date and of unusual value.

Your Inner Self. By Louis E. Bisch, A.B., M.D., Ph.D. 193 pages. Garden City: Doubleday, Page & Co., 1922. Cloth, $1.50.

An attempt to give the elementary principles of psychoanalysis for those who are not acquainted with the subject. Popular Science.

Protists and Disease. Vegetable Protists; Algae and Fungi, including Chytridineae; Various Plasmomyxineae, the Causes of Moluscum Contagiosum, Smallpox, Syphilis, Cancer and Hydrophobia; Together with the Mycetozoa and allied groups. Being the Sixth Book published for the Author on the same subject. By J. Jackson Clarke, M.B. (Lond.), F.R.C.S., Senior Surgeon Hampstead and Northwest London Hospital, and Surgeon Royal National Orthopedic Hospital. Illustrated with a frontispiece and 61 Text Figures. 229 pages. New York: William Wood & Co., 1922. Cloth, $5.00

This volume is one of a series of books on the same subject and the author takes the stand that the generally accepted teachings of biology and botany are incorrect in so far as the conception of the cell is concerned. He considers the causes of syphilis, cancer, smallpox, hydrophobia, molluscum contagiosum are a vegetable parasite of the synchritrium family. This is deduced from imperfect data.

Besides the fact that the author's conclusions are not substantiated by the data submitted, the book is written in such a poor style that it is difficult to keep one's interest focused upon the subject.

Food and the Principles of Dietetics. By Robert Hutchison, M.D., F.R.C.P., Physician to London Hospital and the Hospital for Sick Children. Fifth edition, 610 pages. William Wood & Co., 1922. Cloth, $5.00.

At no time in the history of medicine has such interest been manifested in the subject of foods and diet as is evident today. Many advances have been made in the study of food and food relation to disease as well as to health. Consequently a large number of new books and revisions of old books have appeared recently, discussing the foods and diet in light of modern investigations. This book is but another example of this type. The new fifth edition of this English work follows the general plan of former editions.

Many interesting features are noticed, among which is a discussion of the problems of diet and nutrition presenting modern views, and also a discussion of different biological values of different foods. The subjects usually discussed in such a work are chapters on animal foods, milk and milk products, vegetables, cereals, bread, and in fact every kind of food stuff or products, vitamins, etc. The question of cooking food and the digestion of foods are given due consideration. The principles of feeding in infancy, and childhood, and also feeding in the various diseases are presented in a satisfactory manner. However, one cannot help noticing the incompleteness of references to diet in diabetes.

The work as a whole is good, and conforms to the usual type of books we receive from English writers.

The Medical Clinics of North America. Published Bi-Monthly. Volume 6, No. 1, July, 1922. St. Louis Number. Illustrated with 61 text figures. 203 pages. Volume 6, No. 2, September, 1922. San Francisco Number. Illustrated with 46 text figures. 204 pages. Volume 6, No. 3, November, 1922. New York Number. Illustrated with 27 text figures. 364 pages. Philadelphia and London: W. B. Saunders Co., 1922. Paper, per year, $12.00.

"The Medical Clinics of North America" is a standard publication which is of real practical use to a large number of physicians. In the three volumes that are here reviewed, certain articles stand out both by their clarity of presentation and their practical application. The clinic by Dr. H. E. B. Pardee on "Management of Patients with Heart Disease During Pregnancy and Labor," should be read by every one engaged in obstetrical work. Dr. Herman O. Mosenthal's paper on "Maintenance by Diet in the Treatment of Diabetes Mellitus" is of much practical value. The clinic of Dr. Ernst P. Boas on "Diseases of the Aorta and Aortic Valves" is also worthy of mention.

In the St. Louis Number, the clinic of Dr. W. McKim Marriott on "Chronic Digestive Insufficiency (Celliac Disease)" and Dr. Ralph A. Kinsell's clinic on "A Bacteriological Clinic Diagnostic Method" are of most practical value.

In the San Francisco Number, the clinic of Drs. Alfred C. Reed and Harry Wyckoff on "Interstitial Protozoa in Clinical Practice" and the clinic of Drs. Charles Fleischner and Edward B. Shaw on "The Management of Diphtheria" are of most importance.

Various other worthy papers are not discussed purely from lack of space.

Physical Exercises for Invalids and Convalescents. By Edward H. Ochsner, B.S., M.D., F.A.C.S., President, Illinois State Charities Commission; Attending Surgeon, Augustana Hospital, Chicago. Second edition, with 56 pages. St. Louis: C. V. Mosby Co., 1922. Cloth, $0.75.

Dr. Ochsner describes forty exercises, simply and with illustrations. It is valuable to the orthopedist, the surgeon, the general practitioner, to the convalescent and even to the business man who leads a sedentary life. However, the special use of each exercise is not indicated.

Regional Anesthesia: Its Technic and Clinical Application. By Gaston Labat, M.D., Lecturer on Regional Anesthesia, New York University; Laureate, Faculty of Medicine, University of Paris; Formerly Special Lecturer on Regional Anesthesia, Mayo Foundation, University of Minn. With a Foreword by William J. Mayo, M.D. 315 original illustrations and 496 pages. Philadelphia and London: W. B. Saunders Co., 1922. Cloth, $7.00.

A fad to be used on appropriate and inappropriate occasions by some surgeons, avoided in all possible cases by others, regional anesthesia is still gaining in popularity. It undoubtedly will be found to have a far greater utility than it now has in the eyes of the average practitioner.

This author, who was aided in his compilation by various artists and other persons attached to the Mayo Clinic, explains the technic of the administration of regional anesthesia in all parts of the body. The solutions to be used, the instructions to be given the nurses, general method, blockings of various nerves, methods in operations upon different parts of the body, with special attention to operations upon the eye, ear, nose, throat, teeth and genito-urinary organs, are described.

The volume is a very important contribution to an increasingly important subject.

Southern Medical News

ALABAMA

Madison County Medical Society has elected the following officers: Dr. Carl A. Grote, President; Dr. T. E. Dryer, Vice-President; Dr. James B. Loughlin, Secretary-Treasurer.

Dr. C. A. Grote has been elected President of the Huntsville Kiwanis Club.

Mobile County Medical Society has elected the following officers: Dr. George C. Kilpatrick, President; Dr. William W. Perdue, Vice-President; Dr. Willis W. Scales, Secretary; Dr. Edly W. Cawthorn, Treasurer.

Morgan County Medical Society has elected Dr. John C. Bragg, Albany, President; Dr. O. M. Roan, Vice-President; Dr. B. F. Austin, Secretary-Treasurer.

Randolph County Medical Society has elected the following officers: Dr. Charles E. Ford, President; Dr. William W. Stevenson, Secretary-Treasurer.

Shelby County Medical Society has elected the following officers: Dr. Claudius O. Lawrence, President; Dr. Willena Peck, Secretary-Treasurer.

Dr. J. F. Yarbrough's Private Sanatorium, Columbia, was totally destroyed by fire November 16. The patients were all saved. The loss was $41,800.

Dr. C. A. Grote, City and County Health Officer for Madison County, has resigned to accept the position of County Health Officer for Guilford County, North Carolina, with offices in Greensboro. Dr. F. B. Austin, Health Officer of Morgan County, has succeeded Dr. Grote.

All the occupants of the Huntsville poor house have been transferred to the new Madison County Home, Fegin Spring Cove, near Huntsville, which was recently opened.

As a memorial to General Wm. C. Gorgas, a drinking fountain presented by the local chapter of the Daughters of the American Revolution to the Gorgas Public School was unveiled November 24 at Toulminville.

Northern Alabama counties are planning to establish health units, according to Dr. W. K. Sharp, of the United States Public Health Service. Limestone County has recently provided an annual appropriation of $5,000 for the establishment of a health unit to be directed by an all-time health officer.

The two new wards for the Bryce Hospital, Tuscaloosa, are under construction. The new addition will represent an expenditure of $150,000.

Deaths

Dr. Thomas Pack Vann, Eva, aged 48, was killed December 8 when the car in which he was driving was wrecked.

Dr. Andrew Joseph Edwards, Woodward, aged 35, died October 15 from influenza.

ARKANSAS

Green County Medical Society has elected the following officers: Dr. E. S. Baker, President; Dr. D. L. Boyd, First Vice-President; Dr. J. G. McKenzie, Second Vice-President; Dr. F. M. Scott, Secretary-Treasurer.

Pulaski County Medical Society has elected the following officers: Dr. D. A. Rhinehart, President; Dr. H. A. Higgins, Vice-President; Dr. R. J. Calcote, Secretary; Dr. W. R. Bathurst, Treasurer.

Sebastian County Medical Society has elected the following officers: Dr. W. R. Rose, Fort Smith, President; Dr. W. G. Eberle, Fort Smith, Vice-President; Dr. H. H. Smith, Fort Smith, Treasurer; Dr. J. D. Southard, Fort Smith, Secretary.

The corner-stone of the St. Edward's Infirmary, Fort Smith, has been laid. It will be a four-story building with accommodations for 150 patients and will be erected at a cost of $200,000. The Sisters of Mercy of Fort Smith will be in charge.

Dr. Leonidas Kirby, Harrison, was elected President of the State Board of Health.

The second floor of the Foreman Block, Texarkana, has been leased by the Federal Government for the use of a general clinic for ex-service men. The rooms were remodeled at a cost of $5,000. The clinic was opened January 1 with a full staff of physicians, dentists, pharmacists and nurses.

Deaths

Dr. Henry Hodgen Kirby, Little Rock, aged 39, died suddenly near Lonoke December 9 while hunting.

Dr. James M. Johns, Texarkana, aged 73, died November 21.

DISTRICT OF COLUMBIA

The Medical Society of the District of Columbia has elected the following officers: Dr. Luther H. Reichelderfer, President; Dr. J. Russell Verbrycke, Jr., First Vice-President; Dr. Edith SeVille Coale, Second Vice-President; Dr. Coursen B. Conklin, Recording Secretary; Dr. Prentiss Willson, Corresponding Secretary; Dr. E. G. Seibert, Treasurer.

The United States Veterans' Bureau offers a special course in neuro-psychiatry to a certain number of qualified physicians on condition that upon completion of the course they will continue in the service of the bureau for a period of at least two years. The main part of the course will be given at St. Elizabeth's Hospital, Washington.

The budget for the fiscal year 1924, submitted to Congress by the President, provides $217,385 for the health department of the District of Columbia. The appropriations recommended include $40,000 for prevention of contagious diseases in the District; $6,500 for maintenance of disinfecting service; $2,000 for enforcement of the act providing for drainage of vacant lots; $1,000 for maintenance of a chemical laboratory; $8,000 for dairy farm inspection.

Beginning February 27, a second course in physiotherapy will be given at the Walter Reed General Hospital, Washington, and will continue for a period of four months. It is open to women who have had at least two years of training in an approved school of physical education.

Dr. Gleaves B. Kenny, Lieutenant, M.C., U. S. Army, Washington, and Miss Pearl Lee Braswell, Norfolk, Va., were married November 30.

Deaths

Dr. Edmund Thomas Murdaugh Franklin, Washington, aged 38, died recently.

Dr. John Potts Fillerbrown, Washington, aged 64, died November 24, following a long illness.

Dr. Meade Randolph Edmunds, Washington, aged 40, died November 30 at the Emergency Hospital from accidental asphyxiation.

Dr. Daniel Olin Leech, Washington, aged 60, died December 14, following an operation.

FLORIDA

Dr. G. H. Benton announces the opening of the Sterling-Worth Sanitarium and Psychopathic Hospital, Coconut Grove, Fla. Practice confined to nervous and mental diseases.

On November 17, under the auspices of the American Society for the Control of Cancer, Dr. Gaetano Bottaro, Genoa, Italy, delivered a lecture on "Prophylaxis and Cure of Cancer" at Tampa. This was the first of a series of lectures on

cancer that will be given at the Latin clubs in the native languages.

An antimosquito conference was held in Daytona December 7-8 in an effort to organize a state association for eradicating the mosquito. There were delegates representing twenty-one cities and towns in the State, four railroads, the Florida Development Board, the U. S. Department of Agriculture, the U. S. Public Health Service, the State Board of Health, and various State and women's organizations.

The State Board of Health has started a mosquito survey of St. Augustine.

The quarantine station headquarters has been moved from Mullet Key to Tampa.

Deaths

Dr. Reuben B. Garnett, St. Augustine, aged 84, died November 23.

Dr. Columbus Drew, Jacksonville, aged 76, died December 13.

GEORGIA

Chatham County Medical Society has elected the following officers: Dr. Herman W. Hesse, President; Dr. Edward C. Demmond, Secretary.

Floyd County Medical Society has elected the following officers: Dr. J. L. Garrard, President; Dr. W. B. Floyd, Vice-President; Dr. M. M. McCord, Secretary.

Chattooga County Medical Society has elected the following officers: Dr. B. F. Shamblin, Lyerly, President; Dr. J. W. Clements, Dirttown, Vice-President; Dr. F. W. Hall, Summerville, Secretary-Treasurer.

Dr. Harry B. Neagle, Augusta, has been appointed Health Officer of Augusta and Richmond County.

The new Wesley Memorial Hospital, erected on the campus of Emory University, Atlanta, by the Southern Methodists, was formally opened December 1. It is a six-story building and has a 200-bed capacity. The Lucy Elizabeth Candler Memorial Hospital is connected with the main building and has sixty-five beds. Mr. Walker White, former Treasurer of the University, is Superintendent and Secretary.

Dr. Eugene E. Murphy, Augusta, has been re-elected President of the City Board of Health.

Deaths

Dr. John H. Hockenhull, Cumming, aged 59, died November 19.

Dr. Robert Lee DeLoach, Decatur, aged 53, died December 24.

Dr. Walter B. Mott, Mount Mourne, aged 87, died October 23 from senility.

Dr. Patrick Clabon Nunn, Davisboro, aged 60, died December 14 from acute indigestion.

KENTUCKY

The Kentucky Conference of Social Work has re-elected Dr. A. T. McCormack President.

The Louisville Urological Society has elected the following officers: Dr. Henry J. Farbach, President; Dr. E. Owsley Grant, Vice-President; Dr. Herman B. Strull, Secretary-Treasurer.

Clark County Medical Society has elected the following officers: Dr. J. E. Baucom, President; Dr. S. J. Rose, Vice-President; Dr. E. R. Cole, Secretary-Treasurer.

Daviess County Medical Society has elected the following officers: Dr. A. L. Kincheloe, Stanley, President; Dr. H. K. Orsburn, Vice-President; Dr. J. J. Rodman, Secretary-Treasurer.

Henderson County Medical Society has elected the following officers: Dr. G. W. White, President; Dr. C. L. Nollau, Vice-President; Dr. P. Ligon, re-elected Secretary.

Lincoln County Medical Society has elected the following officers: Dr. J. A. Harmon, Crab Orchard, President; Dr. J. E. Peyton, Stanford, Vice-President; Dr. Lewis J. Jones, Stanford, Secretary-Treasurer.

Madison County Medical Society has elected the following officers: Dr. C. E. Smott, President; Dr. R. A. Phelps, Union City, Vice-President; Dr. J. A. Mahaffey, re-elected Secretary-Treasurer.

Montgomery County Medical Society has elected the following officers: Dr. John F. Knox, President; Dr. P. K. McKenna, Vice-President; Dr. D. H. Bush, Secretary-Treasurer.

McCracken County Medical Society has elected the following officers: Dr. F. A. Jones, President; Dr. Virgil L. Powell, Vice-President; Dr. H. P. Linn, Secretary; Dr. P. H. Stewart, Treasurer.

Perry County Medical Society has elected the following officers: Dr. S. B. Snyder, President; Dr. M. E. Combs, Vice-President; Dr. J. P. Boggs, Secretary.

Russell County Medical Society has elected the following officers: Dr. W. G. D. Flanagan, President; Dr. A. V. Neathery, Vice-President; Dr. J. B. Schol, Secretary-Treasurer.

In order that more work of a preventive measure may be made possible, especially in the fields of normal mental health, mental disease, feeble-mindedness, dependency and delinquency, the State Board of Health has created a new department to be known as the Bureau of Mental Hygiene.

The following have been appointed on the medical advisory staff for the Institute for the Feeble-Minded: Dr. L. T. Minish, President; Drs. E. C. Roemele, G. H. Heilman, C. F. Coleman, John Patterson and J. S. Coleman.

Miss Lawrence is now in charge of the Ashland General Hospital, the Sisters of St. Francis having left the institution to take charge of a new hospital in Toledo, Ohio.

Dr. Herbert T. Thornburgh, Toledo, Ohio, has been appointed Assistant Superintendent of the Eastern State Hospital, Louisville, succeeding Dr. Harry S. Seiwell.

Dr. D. H. Swengel has been appointed all-time Health Officer for Johnson County.

Dr. J. U. Ridley has been appointed County Health Officer for Henderson County, succeeding Dr. E. N. Powell.

The Hardin County Board of Health was recently organized. The following officers were elected: Judge J. L. Irwin, Chairman; Dr. D. E. McClure, Secretary; Judge J. L. Irwin, Dr. J. M. English, Dr. J. C. Mobley and Dr. H. R. Nusz.

Five sanitary inspectors will be added to the State Board of Health. They will be sent to counties in the State where they are most needed and where they can be used most effectively.

Dr. John W. Moore has been appointed Medical Superintendent of the City Hospital, Louisville.

The new addition to the Moseley Hospital, Henderson, is almost completed.

The hospital to be erected at the Old Folks' and Rebekahs' Home, Eminence, will be erected at a cost of $60,000.

It is understood that Dr. John T. Boldrick, Lebanon, will erect a hospital at a cost of approximately $25,000.

Deaths

Dr. Frank Major Beard, Shelbyville, aged 53, died December 20 from myocarditis.

Dr. Alva B. Coons, Georgetown, aged 62, died December 23 from paralysis.

Dr. Tyron Y. Howard, Niagara, aged 84, died January 4 from cancer of the stomach.

Dr. George Washington Ford, Lynn Camp, aged 60, died December 31 from pneumonia.

Dr. Charles P. Cook, New Albany, aged 65, died suddenly January 7 from apoplexy.

Dr. Ed T. Sallee, Garlin, aged 82, died December 22.

Dr. John Karagiozian, Louisville, aged 62, died December 6.

Dr. Benjamin Green Brown, Dalton, aged 71, died December 18, after a long illness.

Dr. J. Ambrose Armes, Leitchfield, aged 52, died December 18.

Dr. Peter B. Davis, Earlington, aged 66, died December 4.

Dr. George Draper Kelley, Lexington, aged 56, died recently.

Dr. Frank L. Lebangood, Louisville, aged 72, died December 15, following an illness of several days.

Dr. J. B. Forest, Murray, aged 68, died December 12 from pneumonia.

Dr. Nelson H. McNew, Carlisle, aged 82, died December 13.

LOUISIANA

The Presbyterian Hospital, New Orleans, celebrated its fifteenth birthday in the Corinne Casanas Memorial Building January 20. The service of the Hospital to the sick poor in and about New Orleans has been steadily increasing. During the year 1922 the Corinne Casanas Free Clinic for the Poor of the Presbyterian Hospital treated 10,034 patients; 296 of these were served with free prescriptions; 598 free pathological tests were made; 129 free roentgen examinations were given; 19 charity patients were admitted to the main Hospital's beds from the Free Clinic; 128 patients were treated in the Hospital's beds as part-pay patients.

The East Baton Rouge Parish Medical Association has elected the following officers: Dr. W. R. Edison, President; Dr. R. B. Wallace, Vice-President; Dr. T. C. Paulsen, Secretary-Treasurer.

Ouachita Parish Medical Society has elected the following officers: Dr. J. W. Walsworth, President; Dr. C. H. Moseley, Vice-President; Dr. P. L. Perot, Secretary-Treasurer.

Orleans Parish Medical Society has elected the following officers: Dr. H. W. Kostmayer, President; Drs. R. Lyons, Elizabeth Bass and F. J. Chalaron, Vice-Presidents; Dr. L. Ledoux, Secretary; Dr. J. A. Lanford, Treasurer.

At the recent meeting of the Rapides Parish Medical Society for the purpose of reorganization of the Hospital Staff, the following were elected: Dr. C. J. Gremillion, Medicine; Dr. R. O. Simmons, Surgery; Dr. J. L. Wilson, Gynecology and Obstetrics; Dr. E. R. Gandy, Specialties.

The Shreveport Medical Society has donated its entire library to the public library, Shreveport.

Shreveport Medical Society has elected the following officers: Dr. Lewis H. Pirkle, President; Dr. W. P. Butler, Vice-President; Dr. C. C. Sims, Vice-President; Dr. R. T. Lucas, Secretary; Dr. L. C. Spencer, Treasurer.

The Baptist Hospital, New Orleans, contemplates additional buildings.

The Hotel Dieu, New Orleans, will erect a six-story addition at a cost of $750,000.

A free clinic has been opened in the City Hall Annex by the New Orleans Health Department. Dr. W. H. Reilley will be in charge of the venereal clinic and Dr. J. C. Cole will be in charge of the tuberculosis clinic.

The Orleans Parish Eye, Ear, Nose and Throat Club has elected the following officers: Dr. A. J. Weil, President; Dr. Wm. T. Patton, Vice-President; Dr. C. A. Bahn, Secretary-Treasurer.

A new clinic has been opened by the Union Indemnity Company, New Orleans.

Dr. Urban Maes, New Orleans, was elected Treasurer of the Southern Surgical Association at its recent meeting in Memphis, Tenn.

The new addition to the Touro Infirmary, New Orleans, will be erected at a cost of $500,000.

Dr. K. E. Miller, Surgeon, U.S.P.H.S., has been detailed to Louisiana to aid in the campaign against dengue fever.

A new maternity clinic has been opened by the Child Welfare Association, New Orleans, with Dr. E. L. Zander in charge.

It is understood that the Presbyterian Hospital, New Orleans, will erect a new building in the rear of its present plant at a cost of $1,000,000.

Dr. Wm. T. Patton, New Orleans, has been elected President of the Kiwanis Club of New Orleans. Dr. T. B. Sellers was elected one of the Trustees.

Drs. Arthur G. Heath and Thomas P. Lloyd, Shreveport, have been elected members of the local Board of Health.

Dr. Florau William Dirmann, Jr., and Miss Mabel Rita Ladet, both of New Orleans, were married November 30.

Dr. Ralph P. Evans and Miss Barbara Neal, both of Alexandria, were married December 15.

Deaths

Dr. Martin Luther Sexton, New Orleans, aged 64, died December 1.

Dr. Henry C. Hornung, New Orleans, aged 73, died recently from acute bronchitis and asthma.

Dr. Jinkens L. Schley, Homer, aged 38, died December 14 at a sanitarium in Shreveport from organic disease of the heart.

Dr. Charles Fox Howell, Laurel Hill, aged 63, died November 17.

MARYLAND

The corner-stone of the Baltimore Municipal Hospital, a new hospital for infectious diseases for Baltimore City, at Lake Montebello, has been laid. The seven buildings now under construction will cost approximately $643,000, exclusive of grounds and furnishings. Dr. Birckhead MacGowan will become Director of the new Hospital. The City Infectious Hospital, of which he is now Superintendent, will be abandoned.

The opening of a ward unit for men of moderate means in the urologic department has been announced by the Trustees of the Johns Hopkins Hospital. A generous gift has made it possible to maintain in part, for several years, a ward unit for those who require hospital treatment, but cannot afford expensive private rooms and professional fees.

The following have been reappointed members of the State Board of Health: Dr. John S. Fulton, Director of Health, formerly Secretary of the State Board of Health; Drs. William H. Welch, Benjamin B. Perry, William W. Ford, E. F. Kelly and Tolley A. Biays.

On December 18 the one hundred and fiftieth anniversary of the University of Maryland, Baltimore, was celebrated. The school was organized in 1807 as the College of Medicine of Maryland. In 1812 it became the University of Maryland School of Medicine; in 1913, it took over the Baltimore Medical College; in 1915, the College of Physicians and Surgeons of Baltimore was merged with it.

Dr. Keith Rice has been appointed by the staff of Johns Hopkins Hospital, Baltimore, as Assistant Resident Surgeon in the Church Home Infirmary, a branch of Johns Hopkins.

Dr. J. Knox Insley has been appointed Commissioner of Labor and Statistics for Maryland.

Dr. Myron G. Tull, Camden, N. J., has been appointed Resident Physician at the Sydenham Hospital, Baltimore.

Dr. Leo Brady, Baltimore, and Miss Lucy McCormick Jewett, Chicago, were married December 5.

Deaths

Dr. Alexander R. Mitchell, Hereford, aged 67, died December 12 at the Mercy Hospital, Baltimore.

MISSISSIPPI

Dr. H. H. Howard, of the International Health Board, on January 1 started a five-year campaign in Jones county against malaria. Dr. Howard will have three assistants, as well as medical students wishing to study malaria.

Deaths

Dr. Jesse Beale Gallaspy, Newton, aged 40, died December 14 from heart disease.

MISSOURI

Clay County Medical Society has elected the following officers: Dr. E. E. Peterson, Nashua, President; Dr. J. E. Baird, Excelsior Springs, Vice-President; Dr. J. J. Gaines, Excelsior Springs, Secretary-Treasurer.

Jasper County Medical Association has elected the following officers: Dr. R. M. Stormont, Webb City, President; Dr. L. C. Chenoweth, Joplin, Vice-President; Dr. James I. Tyree, Secretary; Dr. M. C. Shelton, Treasurer.

Lawrence-Stone County Medical Society has elected the following officers: Dr. T. T. O'Dell, President; Dr. W. N. Datherage, Galena, Vice-President; Dr. R. C. Robertson, Aurora, Secretary.

Randolph County Medical Society has elected Dr. G. O. Cuppaidge President.

St. Louis County Medical Society has elected the following officers: Dr. W. F. O'Malley, Webster Groves, President; Dr. Robert B. Denny, Creve Couer, Vice-President; Dr. Otto W. Koch, Clayton, Secretary-Treasurer.

December 3-10 was observed as School and Health Week in the State. The State Department of Education, the State Board of Health, the Missouri posts of the American Legion and the Rotary clubs cooperated with the Missouri Tuberculosis Association in observance of the week.

Miss Ranz has been appointed Superintendent of the Audrain Hospital, Mexico, succeeding Miss Reitz.

Dr. A. H. Horn has been elected a member of the medical staff of State Hospital No. 1, succeeding Dr. F. H. Mapes, resigned.

The new high school on Natural Bridge Road, St. Louis, will be named in honor of Dr. William Beaumont, who served as President of the St. Louis Medical Society in 1841.

A fifty-bed hospital will be erected at Sarcoxie at a cost of $112,694.

An out-patient department of the Boone County Hospital has been organized. The object is to provide free medical service for all who are unable to pay.

Dr. J. F. Harrison has been reappointed Physician of Audrain County.

Miss Flowers, St. Louis, has been appointed Superintendent of the Galloway County Hospital, Fulton, succeeding Mrs. Wilcox, resigned.

Mrs. Hannah Duryea in her will bequeathed securities valued at more than $50,000 to the St. Louis University to be used for dispensary purposes in connection with the medical school.

The corner-stone of the new St. Mary's Hospital, St. Louis, has been laid.

Deaths

Dr. Isaac M. Minton, Fortescue, aged 67, died November 11 from heart disease following an operation.

Dr. Leo Caplan, St. Louis, aged 57, died November 25 in Vienna, Austria, from carcinoma.

Dr. Callie Singleton Walker, Kansas City, aged 69, died December 10.

Dr. Louis Willard Luscher, Kansas City, aged 64, died December 26.

Dr. Thomas Hazen Humphreys, Kissee Mills, aged 59, died December 25, after a few hours' illness.

NORTH CAROLINA

Buncombe County Medical Society has elected the following officers: Dr. Charles Hartwell Cocke, President; Dr. Lewis

(Continued on page 36)

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(Continued from page 150)

W. Elias, Vice-President; Dr. Arthur F. Toole, Secretary-Treasurer.

Carteret County Medical Society has elected the following officers: Dr. C. L. Swindell, President; Dr. C. L. Outland, Secretary-Treasurer.

Mecklenburg County Medical Society has elected the following officers: Dr. J. C. Montgomery, President; Dr. John P. Kennedy, Secretary-Treasurer.

The Eighth District Medical Society of North Carolina has elected Dr. Arthur de Talma Valk, Winston-Salem, President.

St. Peter's Hospital, Charlotte, is building a new addition at a cost of approximately $65,000.

Gastonia will have a new city hospital, work on which will be started soon. The cost will be $103,000.

All patients from Kenilworth Hospital, Asheville (a Public Health Service hospital) on December 1 were ordered removed to Memphis, Tenn., Atlanta, Ga., Lake City, Fla., and Oteen.

Dr. Harry L. Brockman, City Physician of Greensboro, has resigned and will associate himself with Dr. Burrus in the High Point Hospital.

Dr. Carl H. Verner, County Health Officer for Craven County, has resigned.

Contracts have been awarded for the women's building and refrigerating plant at the Morganton State Hospital at a cost of approximately $108,000. The women's building will cost $74,000 and will have a capacity for 104 inmates.

Dr. William M. Scruggs, Charlotte, and Miss Helen Briggs, Raleigh, were married November 22.

Dr. J. Samuel Talley, Troutman, and Miss Edith Murdock McLaughlin, Statesville, were married October 12.

Dr. John E. Evans, Wilmington, and Miss Sara Shepherd, Chatham, Va., were married November 28.

Dr. J. J. Murphy, Wilmington, and Miss Burwell were married November 1.

Deaths

Dr. Jose Martin Selden, Asheville, aged 46, died January 7, following a prolonged illness.

Dr. George Henry West, Fairmont, aged 60, died November 30 in the Pennsylvania Hospital, Philadelphia.

(Continued on page 38)

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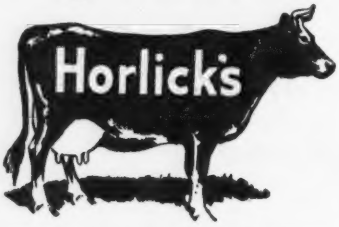

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(Continued from page 36)

Dr. Forest Alphonso Carpenter, Statesville, aged 43, died December 2 at the Battle Creek Sanitarium, Battle Creek, Mich., from cerebral hemorrhage.

Dr. Archibald Cheatham, Durham, aged 58, died December 10 from cerebral hemorrhage.

OKLAHOMA

Creek County Medical Society has elected the following officers: Dr. W. G. Bisbee, Bristow, President; Dr. E. W. Reynolds, Bristow, Secretary-Treasurer.

Greer County Medical Society has elected the following officers: Dr. J. B. Hollis, President; Dr. E. W. Mabry, Vice-President; Dr. E. M. Poer, Secretary-Treasurer.

Ottawa County Medical Society has elected the following officers: Dr. R. H. Harper, President; Drs. J. D. Bewley, Miami, E. S. Leisure, Afton, and I. Phillips, Picher, Vice-Presidents; Dr. G. Pinnell, Miami, Secretary-Treasurer.

Pittsburg County Medical Society has elected the following officers: Dr. McClellan Wilson, President; Dr. C. T. Harris, Kiowa, Vice-President; Dr. F. L. Watson, Secretary-Treasurer.

Pushmataha County Medical Society has elected the following officers: Dr. H. C. Johnson, Antlers, President; Dr. George Robinett, Albion, Vice-President; Dr. J. A. Burnett, Crum Creek, Secretary-Treasurer.

Rogers County Medical Society has elected the following officers: Dr. Wm. P. Mills, President; Dr. George Strickland, Vice-President; Dr. L. H. Henley, Claremore, Secretary-Treasurer.

Drs. C. M. Bloss and Robert Keyes, Okemah, will erect a hospital building.

Dr. John R. Walker, Enid, has been elected President of the Kiwanis Club.

Deaths

Dr. George S. Turner, Krebs, aged 52, died October 25 from cerebral hemorrhage.

Dr. Jesse Raymond Burdick, Tulsa, aged 44, died suddenly December 8 from cerebral hemorrhage.

(Continued on page 40)

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(Continued from page 38)

SOUTH CAROLINA

The Department of Rural Sanitation has conducted work in eighteen counties in the State during the past year. Each county had a full-time health department. Nearly 400 public health lectures and 500 talks to school children were given; nearly 15,000 homes were visited. Hookworm campaigns were carried out in four counties and tuberculosis clinics were held throughout the eighteen counties. The Department examined 13,155 school children, of which number 6,951 were found defective. A campaign will be conducted to establish a full-time health department in every county in the State.

Deaths

Dr. Francis Asbury Coward, formerly of Columbia, but recently of Helena, Mont., aged 45, died December 3 from bulbar paralysis.

Dr. James Carlisle Harmon, McCormick, aged 28, died recently.

Dr. Walter D. Nicholson, Columbia, aged 87, died October 6 at the Confederate Soldiers' Home from rheumatic fever.

Dr. Joseph B. DuRant, Lake City, aged 46, died December 8 from influenza and pneumonia.

Dr. James J. Wingard, Lexington, aged 58, died December 4.

TENNESSEE

The Southern Surgical Association, at its thirty-fifth annual meeting in Memphis, December 13-15, elected the following officers: Dr. James F. Mitchell, Washington, D. C., President; Drs. G. Battle Malone, Memphis, and Irvin Abell, Louisville, Ky., Vice-Presidents; Dr. Urban Maes, New Orleans, La., Treasurer; Dr. Hubert A. Royster, Raleigh, N. C., re-elected Secretary. White Sulphur Springs, W. Va., was chosen as the meeting place for 1923.

Anderson County Medical Society has elected the following officers: Dr. J. H. Gammon, Coal Creek, President; Dr. J. T. Hayes, Oliver Springs, Vice-President; Dr. J. S. Hall, Coal Creek, Secretary-Treasurer.

(Continued on page 42)

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(Continued from page 40)

Hamblen County Medical Society has elected the following officers: Dr. L. H. Milligan, President; Dr. H. E. Shields, Vice-President; Dr. C. T. Carroll, Secretary-Treasurer.

Maury County Medical Society has elected the following officers: Dr. W. W. Woodard, Spring Hill, President; Dr. M. A. Beasley, Hampshire, Secretary.

Obion County Medical Society has elected the following officers: Dr. F. W. Watson, President; Dr. E. A. Boswell, Troy, Vice-President; Dr. Ira Parks, Union City, Secretary-Treasurer.

Rutherford County Medical Society has elected the following officers: Dr. J. R. Gott, Murfreesboro, President; Dr. J. B. Shipp, Smyrna, Vice-President; Dr. J. A. Scott, Murfreesboro, Secretary-Treasurer.

Shelby County Medical Society has elected the following officers: Dr. J. B. McElroy, President; Dr. W. T. Swink, Vice-President; Dr. Thomas N. Coopedge, re-elected Treasurer; Dr. A. F. Cooper, re-elected Secretary.

Sullivan-Carter-Johnson Counties Medical Society has elected the following officers: Dr. J. C. Hutchins, Crandall, President; Dr. Bruce E. Rhea, Mountain City, Vice-President from Johnson County; Dr. J. L. Cottrell, Elizabethton, Vice-President from Carter County; Dr. P. E. Marsh, Kingsport, Vice-President from Sullivan County.

Tipton County Medical Society has elected the following officers: Dr. G. B. Gillespie, President; Dr. L. A. Yarbrough, First Vice-President; Dr. A. J. Roby, Second Vice-President; Dr. J. F. Myers, re-elected Secretary-Treasurer.

Washington County Medical Society has elected the following officers: Dr. George Campbell, President; Dr. U. G. Jones, Vice-President; Dr. E. T. West, Secretary.

Dr. George T. Wilhelm, Memphis, has been appointed Director of the Department of Hygiene and Students' Health Service of the University of Tennessee.

The King's Mountain Memorial Hospital, Bristol, is being erected at a cost of $150,000.

The Mercy Hospital for Negroes, Bristol, being built at a cost of approximately $20,000, is practically complete.

Dr. Willis Campbell, Memphis, has been awarded the News-Scimitar Trophy because of having rendered the most notable civic work for the betterment of Memphis during 1922.

(Continued on page 44)

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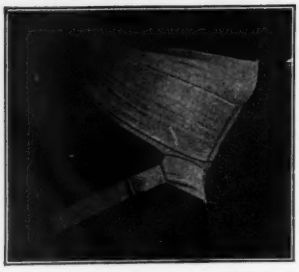

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(Continued from page 42)

Bids have been placed for the erection of the Knox County Tuberculosis Sanatorium. The sum of $100,000 has been set aside for the construction of the institution.

Dr. John F. Binkley, Nashville, has been appointed Director of Rural Sanitation, succeeding Dr. E. L. Bishop, who recently was granted leave of absence to take a course in Johns Hopkins University, Baltimore.

Dr. J. C. Akard has been re-elected County Superintendent of Schools of Sullivan County. Dr. S. R. McDowell, Blountville, Dr. M. M. Pearson, Bristol, and Dr. O. S. Hauk, Kingsport, were elected County Physicians.

Dr. W. D. Haggard, Nashville, has been elected President of the Exchange Club.

Dr. Herbert Acuff, Knoxville, has purchased the Young Building for $42,000. The entire building will be remodeled, making it over into an up-to-date office building.

Dr. E. R. Mulherin, Brownsville, has been re-elected County Health Officer for Haywood County.

Dr. Thomas M. Smoot, Woodbury, has been re-elected County Physician for Cannon County.

Dr. Jerome B. Smith, Ashland City, has been re-elected County Health Officer for Cheatham County.

Dr. W. B. Lovingood, Maryville, has been re-elected County Physician for Blount County.

Dr. P. L. Henderson, Morristown, has been elected City Physician.

Deaths

Dr. John Newton Chism, Jamestown, aged 69, died December 5.

Dr. Matthew Hill Grimmett, Greenvale, aged 74, died December 12.

Dr. James Harvey Preston, Nashville, aged 67, died suddenly December 26.

Dr. J. L. Ray, Burnsville, died October 31 from injuries received in a fall from his barn loft.

Dr. F. J. Upham, Crossville, aged 62, died December 20, following an illness of a few months.

Dr. William Howell Batte, Memphis, aged 44, died January 1 at the Gartly-Ramsay Hospital after an illness of three weeks.

Dr. Nathaniel J. Minter, Chattanooga, aged 57, died December 30.

(Continued on page 46)

The Management of an Infant's Diet

Constipation

Infants that have a fat intolerance as a result of being fed upon mixtures containing a high percentage of cow's milk fat may develop a condition of constipation of a most pronounced type. This appears, at first, to be most difficult to correct; yet a very simple adjustment of the diet will bring prompt relief. The proper procedure is to remove all of the cream from the milk to be used in preparing the diet and add an easily assimilable carbohydrate. This carbohydrate element should be free from starch and one that has a high point of assimilation, for it is important that a relatively high percentage be used in order to compensate for the heat and energy lost by removing the fat.

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contains the carbohydrate—maltose—which answers the purpose, for maltose is utilized in larger amounts than any other carbohydrate. Successful results may therefore be obtained by preparing the modification with skimmed milk and at least four level tablespoonfuls of Mellin's Food to each pint of the food mixture.

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in conformity with the theories, formulas and processes of the discoverer, Paul Ehrlich.

H·A·METZ LABORATORIES, INC

(Continued from page 44)

TEXAS

The North Texas Medical Association has elected the following officers: Dr. Murphy M. Morrison, Denison, President; Dr. David M. Higgins, Gainesville, Vice-President; Dr. Wm. S. Horn, Fort Worth, Secretary-Treasurer.

The Northwest Texas Medical Society was reorganized December 7, during the meeting of the Tri-State Society. The officers are as follows: Dr. Robert T. Mann, Texarkana, President; Drs. William G. Hartt, Marshall, and Alvin Dinwiddie, Clarksville, Vice-Presidents; Dr. Wm. Hibbitts, Texarkana, Secretary-Treasurer.

The State Pathological Society of Texas has elected the following officers: Dr. James H. Black, Dallas, President; Dr. Beecher F. Stout, San Antonio, Vice-President; Dr. Wilbur F. Thomson, Beaumont, Secretary-Treasurer.

Dallas County Medical Society has elected the following officers: Dr. C. M. Rosser, President; Dr. Franklin A. Pierce, Vice-President; Dr. William West Fowler, Secretary.

Eastland County Medical Society has elected Dr. William H. Guy, Carbon, President, succeeding Dr. Thomas L. Lauderdale, Ranger.

McLennan County Medical Society has elected the following officers: Dr. W. L. Crosthwait, President; Dr. W. A. Wood, Vice-President; Dr. J. L. Kee, Secretary-Treasurer.

Tom Green County Medical Society has elected the following officers: Dr. A. W. Clayton, President; Dr. Hubbard K. Hinde, Secretary-Treasurer.

Dr. William T. Largent, McKinney, has been reappointed Health Officer for Collin County.

The Hermann Hospital, Houston, under the terms of the will of George Hermann, will be erected for those unable to pay hospital and surgical fees. The first unit of the Hospital will cost approximately $200,000.

Work will be started on the construction of the joint city and county hospital of Houston and Harris county when $100,000 from the County's taxes becomes available.

Deaths

Dr. Samuel Ramsey Milliken, Dallas, aged 43, died December 3 in Washington, D. C., following a long illness.

Dr. John Benjamin Latham, Abilene, aged 50, died November 26.

Dr. Felix R. Collard, Wheelock, aged 78, died December 13.

(Continued on page 48)

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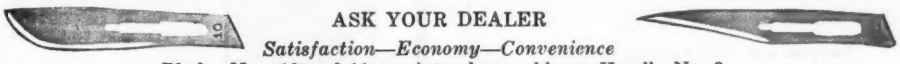

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A doctor in her home town cared for her during convalescence.

She did not improve and sought the services of another physician in another part of the same state.

He suggested a trip to California. After arriving on the coast, sought and received services from Doctor Number Four.

Upon returning home she died, several months later.

Her husband sued Doctor Number One.

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(Continued from page 46)

Dr. Shirley Calhoun Gage, Waco, aged 51, died December 19.

Dr. S. H. Abbott, McKinney, aged 64, died December 23.

VIRGINIA

The Virginia Society of Oto-Laryngology and Ophthalmology has elected the following officers: Dr. Elbyrne G. Gill, Roanoke, President; Dr. Joseph A. White, Richmond, Vice-President; Dr. Emanuel U. Wallerstein, Richmond, Secretary-Treasurer.

The Columbus County Medical Society has reorganized and elected the following officers: Dr. Tilon V. Moore, Acme, President; Dr. Richard B. Whitaker, Whiteville, Vice-President; Dr. Floyd Johnson, Whiteville, Secretary.

Mecklenburg County Medical Society has elected the following officers: Dr. W. W. Wilkinson, LaCross, President; Dr. H. M. Snead, South Hill, Secretary.

Russell County Medical Society has elected the following officers: Dr. C. B. Greer, President; Dr. E. M. Wilkinson, Vice-President; Dr. David P. Lepper, Secretary-Treasurer.

A movement is on foot to organize a medical society along the Clinch Valley division of the Norfolk and Western and Louisville and Nashville railroads, composed of physicians from the counties of Tazewell, Buchannan, Russell, Dickenson, Wise and Lee. The society will be similar to the Southwestern Medical Society, comprising counties along the Norfolk and Western Railroad from Bristol to Roanoke.

Members of the family of Dr. Hunter H. McGuire recently presented to the Medical College of Virginia a bronze bust of Dr. McGuire. The bust was made by Dr. John W. Brodnax, Associate Professor of Anatomy at the Medical College.

Dr. T. D. Davis has become assistant to Dr. Douglas VanderHoof, Richmond.

Dr. Claude N. Rucker, Danville, has been appointed Captain of the Medical Corps, Virginia National Guard, and assigned to duty with Hospital Company No. 10, Danville.

Dr. E. C. Levy, Director of Public Welfare, Richmond, was elected President of the American Public Health Assotion at its recent meeting in Cleveland.

Dr. R. H. Fuller, Clover, is building a hospital for the care of his private practice.

The Alleghany Sanitarium, Goshen, was destroyed by fire

(Continued on page 50)

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MALT SOUP

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(Continued from page 48)

November 30. The loss is estimated at about $150,000.

Dr. Garnett Nelson has been elected President of the University Club of Richmond.

The Fredericksburg Board of Health was recently reorganized. The following were elected members: Dr. W. A. Bell, President; Drs. Lee Cooke and F. T. Cassidy.

Dr. Thomas Lee Settle Camp was organized at Upperville recently. Dr. E. A. Moore, Marshall, was elected Commandant, and Dr. Frederick Goochnauer, Upperville, First Lieutenant-Commander.

The American Clan McGregor Society has reelected Dr. Edward Magruder National Chieftain.

Dr. Charles F. Rinker and Mrs. Louisa D. Hall, both of Upperville, were married November 15.

Dr. Gustave B. Dudley, Jr., Danville, and Miss Priscilla Humbert, Lowmoor, were married December 6.

Dr. William Landon Brent, Colonial Beach, and Miss Lucille Lewis, Birmingham, Ala., were married in November.

Deaths

Dr. Massie L. McCue, Greenwood, aged 74, died November 15 from cerebral hemorrhage.

Dr. William S. Cline, Woodstock, aged 78, died November 19 from injuries received in a fall some time ago.

WEST VIRGINIA

Raleigh County Medical Society has elected the following officers: Dr. A. H. Grigg, Beckley, President; Dr. W. W. Hume, Beckley, Vice-President; Dr. G. P. Daniel, Glen Daniel, Vice-President; Dr. Charles S. Smith, Beckley, re-elected Secretary-Treasurer.

The Ohio County Academy of Medicine, under the auspices of the Ohio County Medical Society, will be erected in Wheeling at a cost of about $75,000. Dr. H. P. Linsz is President and Dr. A. McGregor, Secretary.

Deaths

Dr. William W. Tomkins, Charleston, aged 61, died December 2 from cerebral hemorrhage.

Dr. Robert H. Pepper, Huntington, aged 60, died December 26 at Mayo's Hospital Rochester, Minn.

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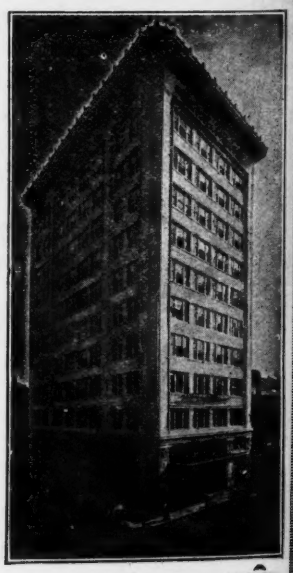

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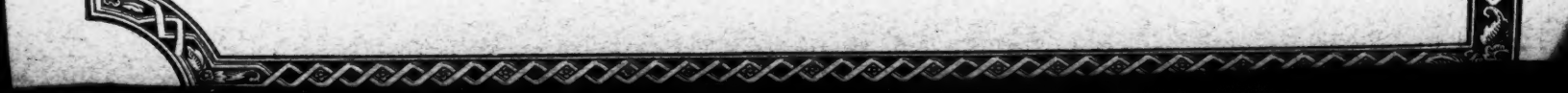

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